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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Nitrogen Fixation in U.S.A.

WE have received a communication of exceptional interest from an American correspondent in a position to speak from intimate knowledge respecting the prospects of the nitrogen fixation industry in the United States. His main purpose in writing is, in a friendly way, to challenge our statement that Great Britain is, with the exception of Germany, the greatest producer of synthetic ammonia in the world. In considering the output in terms of sulphate of ammonia, and overlooking for the moment the fact that America deals mainly in the form of anhydrous ammonia, we fear we did our American friends some injustice, and are only too glad of the opportunity which this interesting correspondence gives of stating the facts about the United States position. This can best be done in our correspondent's own words.

"I read THE CHEMICAL AGE regularly," he writes, "and your editorials the day they appear on my desk. I have always appreciated what you have to say, and have almost invariably been in sympathy with what you write. But you have made a real

mistake in your editorial entitled 'Nitrogen Fixation Critics,' in your issue of March 7. You state that while the United States, France, and other nations have been pottering about with experiments, Brunner, Mond and Co. have delivered the goods, and made Great Britain the greatest producing agent in the world, except Germany. The fact is that the United States is to-day producing more fixed nitrogen by the synthetic ammonia process than is Great Britain, although the fixed nitrogen which it makes is, for economic reasons, sold in the form of anhydrous ammonia instead of in the form of ammonium sulphate. There are two plants in regular continuous operation, one at Syracuse and the Casale plant at Niagara Falls. These two together are producing approximately 33 tons of anhydrous ammonia a day. This is equivalent to 130 tons of ammonium sulphate daily. In addition, the Mathieson Alkali Co. have a plant which is producing about three tons a day. The du Ponts expect to have a plant of about 25 tons of anhydrous ammonia before the year is out, and this plant will be rapidly increased. It is stated that they have sufficient gas for 125 tons a day; also that the plant at Syracuse can be made to give a double output whenever wanted. Another plant is just starting operations on the Pacific Coast, and two others are to be built. All of these latter can, however, be forgotten when considering the relative outlook of the two nations.

"Because the United States cyanamide plant at Muscle Shoals," our correspondent continues, "has been idle since the war, people have an idea that nothing is being done in America. This plant was built as a war emergency. There never has been a time when it could be economically operated, and chemical engineers understand this fully. That is the great reason why Congress has never come to any conclusion as to the disposal of Muscle Shoals. They have tried to keep it in politics, knowing all the time that the power at Muscle Shoals had no real relation to nitrogen fixation, and to use it for the fixation of nitrogen would be an uneconomical procedure. The United States is, however, going forward rapidly in nitrogen fixation."

We are sure that our readers will be as much interested as ourselves in this account of the United States position, and all students of nitrogen fixation processes will watch keenly for confirmation of an impression that exists among American authorities, namely, that the costs in the case of the du Pont plant which is to be erected at Clinchfield, Virginia, and which, it is understood, will be based on the Claude process, will represent a saving of 25 per cent. on the costs in the British process.

The Billingham Nightmare

THE official statement issued by Synthetic Ammonia and Nitrates, Ltd., respecting the recent references in Parliament to the Billingham nitrogen fixation works, confirms what we have previously said about the real situation, and illustrates afresh the pathetic ignorance of the Labour critics. The *Daily Herald*, the mouthpiece of these newly discovered authorities on chemical science, continues to scream about the Government's iniquity in disposing of "a secret method of producing nitrogen," and their betrayal of a public trust in not exploiting the method themselves and instantly causing showers of fixed atmospheric nitrogen to rain upon the famished earth. The Labour members who have raised this question have probably never heard of the labours of the Nitrogen Products Committee and of the hopeless difficulties which confronted the Government when they came to tackle a technical job which they wisely realised was beyond them. If the Government betrayed the public interest in not attempting what they knew they could not do, the scientists of the Labour party equally failed in their duty in not buying up Billingham and everything connected with the scheme and demonstrating their fitness to run scientific industries. Billingham was advertised, and they could have bought it as easily as Brunner, Mond and Co. did. They missed a great chance, but even now it is not too late for them to try. There is plenty of air still unmonopolised. All they have to do is to separate the nitrogen from the oxygen, to mix the latter with hydrogen to form ammonia, to treat the latter with sulphuric acid, and thus to secure an unlimited supply of sulphate of ammonia. Could anything be simpler? Why, the staff of the *Daily Herald*, judging by the airy terms in which they discuss the problem, would be able to do it quite comfortably in their spare time. We make them a neighbourly present of the suggestion.

Meanwhile the nation will be grateful to Brunner, Mond and Co. for a technological achievement which has put this country into a new position of independence and enhanced its chemical reputation. And all thinking citizens, including those who genuinely sympathise with Labour, will ponder deeply the prospect of entrusting the control of scientific industries to people who are capable of talking the twaddle about Billingham to which for some weeks past the public has had to listen.

Electrical Energy and Power Alcohol

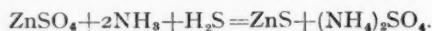
THE interesting possibilities in connection with the home production of power alcohol from root crops which were alluded to by Sir Frederic Nathan in the recently published memorandum to which we referred in these columns a fortnight ago bring to mind the opinions of that school of technical chemists which still contends that synthetic processes could well be operated in this country at a cost which would enable alcohol to be put on the market in competition with petrol or benzol. As we remarked previously, the experiments which have been carried out with root crops, together with the conclusions which have now been arrived at, make a definite approach towards a definite

policy, but the whole process is somewhat dependent upon the co-operation of the agriculturist, and from the point of view of production it would be a scattered and rather disconnected business. On the other hand, if synthetic means were employed it would be more or less possible to concentrate operations, for although there are possibilities of gasworks and coke-oven undertakings becoming producers of alcohol by way of ethylene, the potentialities of synthesis from calcium carbide as a starting point are far more attractive. Technically, of course, the ethylene process is perfectly sound, and it has been estimated that were all the ethylene in the total quantity of gas produced in this country converted into alcohol some fifty million gallons per annum of the latter might be produced, but as the process is one which is only applicable to the largest installations the quantity of fuel resulting from it would go but a very little way towards satisfying our requirements.

One authority has calculated that by employing the synthetic process which operates through the cycle of calcium carbide through acetylene and acetaldehyde to alcohol it should be possible to produce fuel alcohol at a cost of little more than 2s. per gallon. The process presents, of course, the advantage that there is no limit to the scale on which it could be conducted, but it is faced with the apparently insuperable obstacle of demanding exceptionally cheap electrical power. Albeit, it must be borne in mind that the whole question of the supply of electrical energy in this country is now receiving the closest consideration; and although there is some slight justification for assuming that the electrical unit will some day be made available at a price of a tenth of a penny, it would seem that such a highly desirable consummation will scarcely materialise within the next decade, if ever.

Cobb's Direct Process

WE are reminded that apart from the Burkheiser process for the direct production of sulphate of ammonia, to which reference was made last week, Professor Cobb, of the Leeds University, who is intimately acquainted with gasworks and coke oven technique, proposed, more than ten years ago, to use zinc sulphate for the recovery of the ammonia associated with crude coal and coke oven gas by a direct process. The reaction involved is broadly this:



The object, as is seen from the equation, is to ensure reaction between the ammonia and hydrogen sulphide of crude coal or coke oven gas and zinc sulphate, to filter in a rotary filter, separating the ammonium sulphate solution from the insoluble precipitate constituted of zinc sulphide, with probably some carbonate, and to evaporate the solution so as to obtain crystals of ammonium sulphate. The filter press cake in any such process would need to be dried, and an attempt made to convert the zinc sulphide content to zinc sulphate.

It will be recalled that about three years ago there was an encouraging announcement in one of the reports of the Chief Alkali Inspector, indicating that a plant on a semi-technical scale had been erected to

work this process, and that interesting results could be anticipated without delay. This was distinctly cheering, but, unfortunately, up to now, little information has been vouchsafed concerning the trial operations in question. Why no news has been forthcoming it is difficult to imagine. There is no reason to suspect difficulty in effecting the chemical combination in question, nor indeed is difficulty likely to arise in the evaporation process, or by reason of the quality of the final product. What we suspect is that the drying of the filter press cake and its conversion to zinc sulphate has proved a difficulty so far incapable of solution from an economic point of view.

To ensure a maximum conversion of zinc sulphide to zinc sulphate, with a minimum production of sulphur dioxide is not an easy technical proposition, and the only conclusion that one can reach by reason of the absence of information concerning the Cobb process is that this has proved a stumbling block to success. Probably this difficulty has become aggravated because the filter press cake was not nearly so rich in zinc sulphide as was originally anticipated, but contained impurities in the form of zinc carbonate, etc. No process of the kind proposed by Professor Cobb could be successful if it entailed the creation of a works to deal with the sale of zinc salts. To be a success, it is necessary to regenerate the filter press cake to the original product with which the process is started, at a minimum of expense. Professor Cobb's process is admirably conceived, and it is something of a disappointment to the chemical and particularly to the gasworks industry that it has not been developed to a greater extent.

United States Dye Litigation

THE United States Government has failed for the second time in its action to invalidate the sale to the United States Chemical Foundation of the German dyestuffs and other patents seized during the war. The three judges who tried the appeal uphold the original decision of Judge Morris, and find that the Government has utterly failed to prove its charges of conspiracy, either against the representatives of the dye and chemical industry or against the Alien Property Custodians in disposing of the patents. The result has been received with great satisfaction by the leaders of the American chemical industry, and it is difficult to see any grounds for the suggestion that the Government may yet take the case to the U.S. Supreme Court.

The position of the United States Government, indeed, all through is a little difficult to understand. The sale of the patents to the Chemical Foundation was arranged by its accredited agents and was subsequently approved and ratified by the President. On the ground that a principal is responsible for the acts of his agent this sale of the patents was virtually the act of the Government. Even if the price were now held to be inadequate or the methods irregular the Government should accept responsibility for its own negligence as a trustee and should not be able, after a lapse of some years, to repudiate a contract into which it freely entered. But the Government has failed to establish either the inadequacy of the price or the irregularity of the methods, and in view of the

heavy costs of the two trials and the decisive judgment in each court one can understand the energetic protests on the part of the American chemical industry against any further expenditure.

Points from Our News Pages

- The Relative Merits of Hand and Mechanical Burners are dealt with in the notes on the recent Birmingham Conference (p. 374).
- The sale of the Billingham works has again been the subject of considerable investigation, and statements in the House of Commons, and by Synthetic Ammonia and Nitrates, Ltd., are given (p. 375).
- Chemical manufacturers will be interested in the explanatory details of the Board of Trade Census of Production for 1924 (p. 376).
- The chemical trade returns for March are more encouraging. Imports and exports are both up on the previous month (p. 377).
- The announcement is made of the resignation of Mr. G. S. W. Marlow from the assistant secretaryship of the Institute of Chemistry. Mr. R. L. Collett, F.I.C., succeeds him (p. 378).
- A letter is published on "Colloid Chemistry" (W. Clayton) (p. 378).
- The inquest on Mr. A. H. Moate, a London chemical merchant, is reported (p. 383).
- The death is announced of Mr. A. Boake (p. 383); Mr. James A. Gordon, Mr. F. Wheen and Dr. H. W. Julius (p. 379).
- Our London and Scottish chemical markets record no important changes, owing to the holiday season (pp. 384 and 387).

Books Received

- CHEMISTRY TO THE TIME OF DALTON. By E. J. Holmyard. London: Oxford University Press. Pp. 128. 2s. 6d.
- BAUXITE AND ALUMINIUM. By W. G. Rumbold. Prepared under the direction of the Mineral Resources Committee of the Imperial Institute. London: John Murray. Pp. 104. 6s.
- DIRECTORY OF PAPER MAKERS, 1925. London: Marchant, Singer and Co. Pp. 280. 5s. 6d.
- INTRODUCTION TO QUALITATIVE ORGANIC ANALYSIS. By Hermann Staudinger and Walter T. K. Brauholtz. London: Gurney and Jackson. Pp. 112. 6s. 6d.
- L'HYDROGENE ET LES GAZ NOBLES. By Dr. J. J. Van Laar. Leyden, Holland. A. W. Sijthoff's Publishing Co. Pp. 79. 13.
- THE CONFIGURATION OF THE SACCHARIDES. By Dr. J. Boeseken, Leyden, Holland: A. W. Sijthoff's Publishing Co. Pp. 132. 13.

The Calendar

1925		
Apr.	Royal Microscopical Society: Conference.	The University, Sheffield.
20,		
21, &	Royal Society of Arts. Howard Lectures: "Motor Fuels." Professor J. S. S. Brame.	John Street, Adelphi, London.
22		
27		
&		
May		
4		
Apr. 22	Institution of Chemical Engineers: "Continuous Petroleum Distillation." A. M. O'Brien. 8 p.m.	Burlington House, Piccadilly, London.
22	Society of Glass Technology: Annual General Meeting. 2.45 p.m.	The University, Sheffield.
23	Oil and Colour Chemists' Association: "Some Problems of the Paint and Rubber Industries." B. D. Porritt.	8, St. Martin's Place, Trafalgar Square, London.
23	Northampton Polytechnic Institute: "The Metallography and Heat Treatment of Iron and Steel"—Defects in Steels. R. Genders. 7 p.m.	St. John Street, London, E.C.1.
24	Institute of Metals (Swansea Section): Annual General Meeting. 7.15 p.m.	University College, Swansea.
24	Institute of Metals (Sheffield Section): Annual General Meeting. "Chromium Plating." Byron Carr. 7.30 p.m.	The University, St. George's Square, Sheffield.
27	Faraday Society: Papers by A. E. Ollard, H. Sutton, W. A. Naish, H. J. Poole, E. K. Rideal, D. B. Macleod. 8 p.m.	90, Great Russell Street, London, W.C.1.

Relative Merits of Hand and Mechanical Burners

Notes on the Birmingham Conference

THE Chemical Engineering Group of the Society of Chemical Industry has been very active during the winter session, and has held a series of conferences, at which papers of notable interest have been given, all of which have evoked discussion of a high order. The final conference of the session was held at Birmingham on Tuesday, April 7, under the presidency of Professor G. T. Morgan, when the subject of discussion was "Hand and Mechanical Burners for the Combustion of Sulphur-containing Materials."

A Defence of Mechanical Burners

Three papers had been prepared, but owing to the unavoidable absence of Mr. Harris two only were delivered. The inability of Mr. Harris to be present was regretted. His paper had been prepared in a way which was distinctly provocative of discussion. His advocacy of mechanical burners was unqualified. But evidences were not wanting to show that he somewhat overstated his case. Despite Mr. Harris's assertion, there is reason to believe that hand burners can be erected at an appreciably lower capital cost than mechanical burners. No arm can be replaced in about an hour. If an average time were taken, it would be found to be nearer twelve hours than one hour. It is useless to urge "freedom from dust" as an advantage of mechanical burners. Mr. Smy (of F. W. Berk and Co.) daily superintends the operation of a large Harris furnace, and his dictum is "that with all these burners (Herreshoff, Harris, and Wedge) there is a fair amount of dust that goes forward with the gas." On the other hand, there can be no doubt that Mr. Harris has recently introduced improvements to his furnace. Hitherto there was a common supply of water to several arms, and it was no easy matter to locate the one which had fractured. Now "the shaft is fitted with detachable arms, neither water nor air cooled, made of a chromium-iron alloy." The question was asked—will the improved type of arm sulphide?

Another consideration which emerged was the respective life of hand and mechanical burners. Hand burners usually have a life of 15 to 20 years. Indeed, a case was instanced of hand burners operating after 30 years. One does not often see figures concerning the age of mechanical burners. Perhaps it is a delicate subject—as delicate as that of feminine age.

Expert Burnermen

Many other interesting points arose out of the discussion, but space will only permit of the mention of a few.

Mr. Calder urged that the type of shift worker differed in various parts of the country. In connection with hand burners, particularly of the pyrites type, a certain inherent dexterity was necessary. Burnermen, like coal miners, are born and not made. In those districts which failed to give birth to these men Mr. Calder suggested that mechanical burners may be a boon. This is a distinct point of view, not frequently stated. He observed what must be a rare experience—that he obtained a clean acid with the Harris furnace. He regarded the "Spirlet" as one of the best furnaces for the combustion of zinc blende. In this furnace alternate hearths rotate, and the ore is stirred by means of special bricks projecting downwards from the hearth above. The wearing away of the projecting bricks which supply the stirring action, and the fact that the repairs can hardly be effected pending the stoppage of the furnace and the rebuilding of the arches, have hitherto deterred manufacturers from adopting this furnace. Evidently Mr. Calder has overcome these earlier difficulties, or has evolved some improvement of design.

Recovered Sulphur

Black recovered sulphur is invariably "brown," and it was agreed that it would be more correct to call it recovered sulphur. Mr. Clayton urged that recovered sulphur burns well in a rotary burner. Fifteen to sixteen per cent. SO_2 can be obtained; the tarry matter volatilises, free carbon remains, and hydrogen sulphide is formed, which presumably burns to SO_2 . The tarry matter associated with recovered sulphur is not nearly so disadvantageous as the petroleum present in some of the American qualities of sulphur. It was pointed out by Mr. Parrish that the ash content was the chief objection to the use of recovered sulphur in mechanical rotary

burners. The latter would probably need to be stopped every third day for cleaning, and this operation involves about eight hours in all—3½ hours for burning off the sulphur, 1½ hours to withdraw the ash and replace the hopper and worm feed, and a further 3 hours to restart the burner and attain normal working.

Mr. Clayton gave some interesting details of experiments concerning the combustion of spent oxide at low temperatures, directed to the production of a rich coloured oxide of iron, suitable for pigment purposes, but the presence of phosphorus and arsenic in the residue was said to be fatal to success.

Fire Risks

Mr. Philip raised questions about fire risk so far as slow-operating worm feeds were concerned, but he was reminded that what had been urged was that in the grinding of sulphur preparatory to feeding the worms it was important to pass the sulphur over a magnetic separator, so that metallic bodies could be removed before grinding actually took place. It was known that the presence of nails, bolts, nuts, etc., in the sulphur to be ground had caused fires and slight explosions. Mr. Philip spoke of the value of temperature as a governing feature in the capacity of any sulphur burner. Mr. Parrish agreed that temperature was an important factor; indeed, he had spoken repeatedly about the advantages of incandescent chequer brickwork. There were, however, limits in the matter of temperature, as sulphur dioxide dissociates into sulphur and sulphur trioxide at 1200° C. Another important factor affecting capacity was time contact. It was conceivable that a high concentration of SO_2 —15 to 18 per cent.—would retard rather than assist combustion of any volatilised or entrained sulphur. Pressure sulphur burners had fulfilled a distinct rôle, and practice had established their utility.

Captain Goodwin referred to what he was inclined to regard in some respects as the precursor of the Bracq-Laurent furnace—the Kershaw spiral spent oxide burner. The fundamental idea underlying the latter was that the slope of the hearth should be greater than the angle of repose of the material undergoing combustion. Unfortunately a standard spent oxide is out of the question. Purifying materials have different origins and vary widely in character. There can be no uniform angle of repose, and there must inevitably be irregularity of movement. The Bracq-Laurent burner was a distinct innovation. Not only were the helocoidal hearths of a pitch less than that of the angle of repose of the sulphur-containing material being burned, but the mechanism which afforded the propulsion of the material was peculiarly unique.

Waste heat boilers, we were told, had been used in connection with sulphur burners, and, pursuing this line of thought the question was asked—why not design a burner for dealing with powdered sulphur on much the same lines as a powdered coal installation? No doubt the idea is feasible, but entrainment of powdered sulphur may constitute a bigger problem than sublimation does at the moment with certain types of burner. With a material which liquefies at a temperature lower than its ignition point, surely a feed of molten sulphur constitutes an ideal arrangement.

The discussion was as full of interest and suggestion as the papers, and it was a fitting termination to a session which will long hold an important place in the records of the Chemical Engineering Group. Both the chairman (Mr. C. S. Garland) and the secretary (Mr. H. Talbot) are to be congratulated on a signally successful winter's work.

C. A.

Hardinge Mill Orders

THE Burma Corporation, Ltd., has ordered the latest type 7 ft. dia. by 22 in. cylinder Hardinge Conical Ball Mill of British manufacture with chrome steel lining and chrome steel balls for the grinding of their ore to 200 mesh. Other orders just received include two 6 ft. by 48 in. Hardinge Pebble Mills for the grinding of silica by the wet method to minus 200 mesh; two 4 ft. 6 in. by 13 in. Hardinge Ball Mills for the wet grinding of tin ore; one 6 ft. by 22 in. Hardinge Ball Mill for the grinding of slag; two Hum-Mer Electric Screens for screening carborundum; one Hum-Mer Electric Screen for the dry screening of limestone.

Sale of the Billingham Works

Official Replies to Recent Questions

THE following official statement has been issued by Synthetic Ammonia and Nitrates, Ltd., respecting the purchase of the Billingham nitrogen "factory":—

"A number of questions have been asked in the House of Commons recently on the subject of the purchase of the Government Nitrogen 'Factory' at Billingham by Brunner, Mond, and Co., Ltd. The suggestions underlying the Parliamentary questions appear to be two:—(1) That a Government factory at Billingham was sold to Brunner, Mond and Co. on terms unduly advantageous to the latter; (2) That certain secret information of great value, the property of the Government, was handed to Brunner, Mond and Co. gratuitously.

"Neither of these suggestions has the slightest basis in fact. Prior to the sale of the factory it was advertised and offered to other firms and individuals. Actually, when taken over by Brunner, Mond and Co. the factory consisted of a number of fields, not even the property of the Government, not drained, and only partially provided with roads and railways. Not a single building other than contractors' temporary huts and sheds for stores had been erected. Only elementary designs and drawings of the future factory existed, and none of them were found to be of use in the subsequent erection of the factory. No special plant for nitrogen fixation had been delivered and very little of it ordered. Contracts had been made with various firms, a number of which had subsequently to be altered, and in some cases cancelled. The general stores on the site, the contractors' plant, the roads and railways, and the contracts entered into by the Government were finally agreed by our own and the representatives of the Disposals Board and the company at a sum of £495,000. The company further undertook the liability to make a loan of £220,000 promised by the Government to the Power Company who had contracted to supply power to the factory, and also entered into certain obligations which the Government considered necessary for national defence.

"As to the secret information, it was naturally a part of the contract that any information or assistance the Government could give us should be at the disposal of the company. Brunner, Mond and Co. formed this company with a capital of £5,000,000, to work the process and to carry out the agreement with the Government. The synthetic plant is now wholly successful on a much larger scale than required by our contract with the Government. We have, therefore, carried out to the full the Government's wish that the synthetic nitrogen industry should be established in this country. As a consequence, not only have we largely increased the supply of fertilizer, at less than pre-war prices, in this country, but we have also rendered it independent of Chilean nitrate as the chief source of our national explosives supplies. Anyone familiar with the precariousness of our position with regard to fixed nitrogen in the last war will realise that this achievement is of the highest national importance."

The Government's Reply

In reply to several questions, Mr. Guinness (House of Commons, April 7) circulated the following statement in the Official Report:—

"The position was that on March 22, 1918, the Minister of Munitions received sanction to proceed with the erection of a factory at Billingham-on-Tees for the production on a large scale of nitrogen and hydrogen and for combining nitrogen and hydrogen so obtained for the production of ammonium nitrate to the ultimate extent of 60,000 tons per annum. Owing to the shortage of labour and of building materials not much progress had been made with the actual building of the factory at the Armistice. Consideration was given to the scheme as a post-War measure, but it was found that, owing to information which had been obtained since the Armistice, particularly in respect of chemical works in the German occupied area, the original scheme, if proceeded with, would have to be much modified.

The matter was submitted to the Cabinet in October, 1919, with a recommendation that the property should be advertised for sale on the basis of the Government interests in the production of nitric acid for service explosives being safeguarded. On Cabinet approval being obtained, the property was extensively advertised in the London, provincial, and technical

Press. It was not stated in that advertisement that the information procured by the Government Commission to the German factory at Oppau would be included, but applicants were informed that further particulars would be supplied on application to the Minister of Munitions. There were no suitable applicants other than Brunner, Mond and Co., Ltd.

In the agreement with Brunner, Mond and Co. there is a proviso by which the Government undertook, on completion of the purchase, to give all available information in its possession as to processes, etc., to the purchasers. The contract was signed on April 22, 1920, by the then Minister of Munitions, Lord Inverforth, and by two directors on behalf of Brunner, Mond and Co.

It is not in the public interest to disclose the terms of the agreement, nor am I prepared to depart from the usual practice of refusing to disclose the sale price of surplus Government property or stores. This rule has always been observed in view of the possibility of prejudicing the purchaser in the event of his wishing to re-sell. I may, however, say that, having regard to the circumstances, the price was, in my opinion, a satisfactory one, and there appeared no probability whatever of obtaining such a price from any other source.

The factory had neither been built nor equipped, but land had been acquired, roads made, and foundations laid, etc., and certain orders for plant, etc., given. The commitments for land, stores, plant, etc., amounted to approximately £1,000,000.

The Commission was sent to Oppau and other chemical factories by the Ministry of Munitions. I cannot ascertain after this lapse of time what the cost was. It is not in the public interest to disclose who were members of the Commission whose report (a confidential document) was received in February, 1919. It was, as already stated, part of the contract that Brunner, Mond and Co. should have access to the report and such other information as was available to the Government, and in this connection, I would refer the hon. member to Article 172 of the Versailles Treaty, which provided that the German Government should disclose to the Allied and Associated Powers the nature and mode of manufacture of all such chemicals as are here in question."

Progress in Road Surfaces

MR. EDWARD HICKMAN, chairman of Tarmac, Ltd., speaking at the annual meeting at Birmingham last week, referred to the firm's progress made in face of the strongest and keenest competition. They had to sell their material at reduced prices, and were only able to produce the satisfactory results by reducing costs and increasing their make of Tarmac. They had been told by trade union people that Tarmac and similar firms should form themselves into a general syndicate throughout the country and put up prices, and then they would be able to pay more wages. Personally, however, he did not believe in doing away with competition. Fair and healthy competition was a good thing for any company. But they had to meet competition not only in this country, but also from abroad. Materials for road making were brought into this country from the other side of the ocean and, he was told, made very slippery roads indeed, especially when there was a drop of rain on the top of them. Their foreign competitors could ship their products to any of the English ports, while Tarmac had heavy carriage to pay to some of them; but by scattering their works all over the country they were enabled to deliver Tarmac at as reasonable prices as possible in all parts of the country.

With regard to the future, while last year was a record year in the matter of output, the output this year up to now was 20 per cent. over that of the corresponding period last year, and there would be an increased profit. It was the last thousand tons that made the most profit, and the more they could go on increasing output the better would be the result next year. They were turning over well in excess of a million tons of material a year, and it would be a great deal more in the current year, unless they had the misfortune to have a coal strike.

Mr. D. G. Comyn called attention to the fact that during recent years they had established a new department for the manufacture of concrete articles such as road kerbs, fencing posts, building blocks, and reinforced concrete articles for building purposes. This department was now well upon its feet and making a profit.

Indian Chemical Notes

ON the question of encouragement to Indian salt industry being raised in the Indian Assembly, the Government of India announced that if private enterprise was forthcoming in Orissa to start factories, the Government were prepared to give facilities in the same way as in Madras, that is, the Central Government will bear the cost of collection up to 5 per cent. of the duty, the excess to be borne by the licensee. Government would also carefully consider the question whether it was possible to arrange for the transport of the salt at low rates by rail.

The qualified chemists and druggists of Madras have constituted themselves into an association to promote and safeguard the interests of pharmaceutical and other chemists in India and to take steps leading to the advancement of the chemical trade and industry of India. It is also proposed to make such endeavours as are necessary to raise the standard of pharmacy, as at present existing in India, to a higher level and bring it in line with that existing in more progressive countries.

The magnesium chloride factory at Khoraghoda and the casein factory at Anand, both in the Bombay Presidency, have been closed owing to unfavourable working. The Rennet casein manufactured during the year was sent to London for testing its commercial value, but the report was not very favourable. In the pottery section, a number of experiments were carried out with various clays to find the best mixture for manufacturing flooring and acid jars, while a small pottery factory is being organised on a semi-commercial scale.

The glass industry showed considerable progress on the whole. A new glass factory was established near Bombay. In the Karachi district, a factory for the production of sulphuric acid at Kotri was started, turning out 25 gallons of acid per day, working 15 days a month. This factory will soon be extended. In the Hyderabad district, celluloid bangles are now being made on a large scale. The oil and lime industry both passed a very prosperous year.

An American syndicate with a capital of 20 million pounds are starting large match factories in India in different centres like Bombay, Karachi, Calcutta and Rangoon. It is reported that a certain chemical essential in the manufacture of matches has been even now cornered by this syndicate. The Indian indigenous match manufacturers look upon this as a great danger to the future of the indigenous match industry in India and are therefore pressing the Government to take the necessary action to protect the indigenous industry.

The report of the Burma Chemical Industries, Ltd., for the year ending December 31, 1924, shows that the working during the year resulted in a net profit of Rs. 100,000, from which a 20 per cent. dividend, free from income tax, was declared. The year was a record one as far as output is concerned. It has been found necessary entirely to scrap some parts of the plant and to renew and extend others, which resulted in considerable expenditure thereon. The plant has been worked at very high pressure during the last six months and is now able to supply all demands made upon it for acid without undue strain. It is gratifying to note that the demand for acid is increasing. The financial position of the company is on a sound basis and the directors look forward to a continuance of past prosperity.

The industry of pottery making is carried on in almost every village in Burma, but the operations of the potters are generally very limited, rarely extending beyond the needs of local requirements. Besides the ordinary rough earthen vessel of household requirement, pottery of quite a high class is also manufactured in several places, e.g., the glazed pottery of Pyinmana, Myinmu and Kyankmyaung, which is not without a certain measure of artistic merit. But nothing had yet been done on a factory scale. The opening of the New Burma Pottery Works in the third week of March at Gyogon is therefore an important event. The works have been, in fact, in existence for some time past, but have now been equipped on up-to-date lines. The Honourable Minister of Agriculture, who performed the opening ceremony, remarked that the fireplaces of these works were a shade better than the Wedgwood works in England, which he had the privilege of visiting while in England. There are now 70 skilled persons in the factory and the articles made are of good size and shape. At present only white pottery is dealt with.

S. G. W.

Census of Chemical Production

Particular Points of Interest to the Trade

A SPECIAL article in *The Board of Trade Journal* deals with the schedules of the census of production to be rendered to the Board of Trade for 1924.

The schedule for the chemical and allied trades may appear to some chemical manufacturers to require a very formidable amount of detail. It is, however, to be observed that a good many of the manufacturers will be concerned, not with all, or nearly all, of the headings that appear upon the schedule, but with a comparatively limited number, and that the record of their production will be the more easily made precisely because opportunity is furnished to record it against headings that are appropriate to the nature of the goods to be recorded. If there had been sufficient information available in advance to group chemical manufacturers in accordance with the specialities which many of them produce, it might have been possible to supply to each a schedule of more modest appearance without in fact requiring any greater detail than is provided for in the schedule that has been issued. Such a procedure, however, would have an inconvenient result for those manufacturers whose operations extend over a considerable range of products, since it would have been necessary to supply them with several such special schedules in order to cover their different departments, a procedure which would have required from them separate information in those sections of the schedules concerned with other matters than output, while the present arrangement will spare them from preparing departmental information for those other sections. Very elaborate precautions are taken to ensure that the information supplied to the Board of Trade on these schedules shall not be communicated to any persons not directly concerned with the work of compiling the Census results and preparing the reports thereon. It may further be desirable to repeat that if it should prove that the publication of the figures of production of certain specific commodities would, in effect, reveal the business of individual firms, such publication can only take place with the assent of the firms concerned.

Use of Standard Units

There is another point of considerable interest which is raised by certain of the entries on the Chemical Trades Schedule. Thus, the particulars recording the amount of sulphuric acid and hydrochloric acid, and of a number of other products mentioned on the schedule, are required to be given in terms of weight or in certain cases of volume (gallons). It would obviously be much more instructive if information could be obtained recording the equivalent quantity of acid, etc., at a definite specified strength, since the addition of numerous quantities of varying strengths not ascertained cannot furnish instructive information. Manufacturers are, accordingly, requested to state, in a limited number of cases, where the matter is of particular interest and importance, the equivalent amounts of product at definite degrees of concentration or purity. While certain standards are suggested, if these are different from the standards currently used by the manufacturers, it will be sufficient if they furnish this information in terms of the units that they are in the habit of employing, so long as they specify the standard used.

Australian Portland Cement Manufacture

THE manufacture of Portland cement continues steadily on the upgrade in Australia, the output for the year being 272,300 tons, valued at £1,200,000 or an increase of 48,448 tons and £174,313 in value as compared with 1923. At least one more company will be producing in 1925, and as two other companies are carrying out development and construction work, and preliminary investigations are being made by several other interests, the further rapid expansion of this section of the mining industry may be confidently anticipated. Lime to the value of £92,582, representing a slight increase, was also produced, but limestone flux was somewhat less than in 1923, and amounted to 114,756 tons, valued at £43,034, according to Department of Overseas Trade reports.

The value of the output of other minerals is as follows:—Alunite, £4,032; arsenic, £18,850; bismuth, £3,135; chrome, £2,032; clays from areas held under mining lease, £26,530; dolomite, £12,559; magnesite, £12,772; manganese, £13,281; molybdenite, £2,475; silica, £15,467; and shale (oil), £962.

Chemical Trade Returns for March

Imports Up, Exports Up, on Last Year's Figures

THE imports for March of chemicals, drugs, dyes and colours show an increase of £226,085 over the figures for March, 1924, the amounts being £1,383,610 and £1,157,525 respectively. Compared with February, 1925, the figures show an increase of £104,930. Exports, however, also show an increase of £158,516 on last year's figures—the totals being £2,192,272 and £2,033,756. Compared with the preceding month they are up by £34,560.

In the imports the figures for sodium nitrate, turpentine, painters' colours, crude glycerin and mercury are noteworthy. On the export side decided increases are to be noted in the case of bleaching powder, crude glycerin, benzol and toluol, while important decreases include sodium sulphate and ammonium sulphate.

Imports for March

INCREASES.			
		1925.	1924.
Acid, tartaric	cwt.	6,368	2,428
Bleaching materials	"	9,992	4,233
Sodium nitrate	"	331,847	108,273
Zinc oxide	tons	712	551
White lead (dry)	cwt.	17,520	10,965
Barytes (including blanc fixe)	"	72,434	52,506
Essential oils (other than turpentine)	lbs.	381,134	342,385
Potassium nitrate (saltpetre)	cwt.	4,931	4,478
Potassium compounds (except nitrate)	"	526,566	490,913
Turpentine	"	25,929	17,085

DECREASES.			
		1925.	1924.
Acid, acetic	tons	558	744
Calcium carbide	cwt.	63,008	67,848
Sodium compounds (except nitrate) ..	"	24,370	26,490
Unspecified painters' colours	"	71,222	129,099
Alizarine dyestuffs	"	920	977
Indigo, synthetic	"	—	—
Indigo, natural	"	38	94
Unspecified coal tar dyestuffs	"	2,048	2,409
Intermediate coal tar dyestuffs (including aniline oil and salt and phenyl glycine)	"	920	977
Glycerin, crude	"	527	4,500
Glycerin, distilled	"	97	326
Nickel oxide	"	4,025	8,759
Cream of tartar	"	3,862	4,202
Mercury	lbs.	30,525	67,724

Exports for March

INCREASES.			
		1925.	1924.
Bleaching powder	cwt.	46,688	20,067
Glycerin, crude	"	9,560	1,466
Sodium carbonate, etc.	"	520,678	411,523
Caustic soda	"	153,039	131,840
Paints and colours ground in oil or water	"	50,449	30,515
Painters' colours, unspecified	"	49,100	43,765
Anthracene	"	1,032	400
Benzol and toluol	galls.	53,041	13,246
Tar oil, creosote oil, etc.	"	3,063,280	2,234,298
Copper sulphate	tons	8,910	7,261
Coal tar dyestuffs	cwt.	10,191	7,474

DECREASES.			
		1925.	1924.
Carbolic acid	cwt.	7,298	12,990
Glycerin, distilled	"	12,639	13,193
Sodium chromate and bichromate ..	"	1,862	3,357
Sodium sulphate (including salt cake) ..	"	27,455	41,455
White lead (dry)	"	8,532	12,901
Ammonium sulphate	tons	19,198	26,321
Ammonium chloride	"	269	313
Acid, sulphuric	cwt.	2,876	3,012
Acid, tartaric	"	990	1,138
Naphtha	galls.	3,463	4,638
Naphthalene	cwt.	1,455	5,624
Potassium nitrate (saltpetre)	"	1,176	1,394
Potassium chromate and bichromate ..	"	1,862	3,357
Unspecified potassium compounds ..	"	4,958	5,705
Dyestuffs other than coal tar products ..	"	4,603	6,236

The British Association of Chemists

An Appeal to Private Practitioners

IT is no exaggeration to maintain that the private practitioner is the backbone of the profession of chemistry, or indeed of any profession. His position is in many respects unique, since he is in general neither employer nor employee, and his success or failure depends, in most cases, directly upon his professional ability and initiative. This is by no means always the case with employers or employees.

The Association desires to add to its ranks a large body of analysts in private practice, since by this means it would be possible to deal with a number of problems that need a final and satisfactory solution. There is, for example, the question of fees. At present no standard is laid down and the Association is aware that there are some persons in private practice carrying out certain forms of simple routine analysis for a fee considerably lower than a properly qualified practitioner would be prepared to accept. It is obvious that in this matter the analyst no less than the public requires protection; a protection by means of which improperly qualified persons could be restrained from practising and issuing certificates of analysis whose value can only be judged by the fee charged.

There is also the question of official appointments for which inadequate remuneration is not infrequently offered. This is a matter which requires very careful examination and until a body exists powerful enough to boycott such appointments this very serious question cannot be attacked. The Association is, however, properly equipped for this purpose and were sufficient numbers of its members affected by such questions it would be able and willing to act.

An expression of opinion regarding the question of registration from a large body of private practitioners would also be welcomed by the Association. It is obviously undesirable that persons whose qualifications have not been examined by some accredited body should be allowed to practise without let or hindrance. And private practitioners ought to be the first to recognise the value of such a step, as much in their own interests as in those of the public. It is one of the Association's principal aims to grapple with this important matter as soon as possible. It realises that a strong expression of opinion from the private practitioners themselves is necessary to accomplish this. The Association possesses the machinery; it remains with the analysts to supply the fuel.

In inviting private practitioners to support and assist the work of the Association, it may be mentioned that membership comprises both employers and employed, but the percentage of private practitioners is unfortunately small and the interests of this, the most important section of the profession, do not therefore receive their due. The Association is assured that it can enormously benefit those who are in private practice, but it obviously cannot adequately support and protect those who remain outside its ranks. Inquiries concerning the Association should be made to The General Secretary, British Association of Chemists, "Empire House," 175, Piccadilly, W.1.

H. T. F. R.

United States Chemical Trade

FEBRUARY exports of chemicals and allied products from the United States showed a 3 per cent. increase over the same month of last year and reached a value of \$10,967,000, according to official reports. Imports decreased 12 per cent., amounting to \$17,351,000 in value. Exports of industrial chemicals in February were valued at \$1,914,000 and imports \$1,734,000. A slightly greater activity was evident in February in foreign sales of ammonia and ammonium compounds, aluminium sulphate, dextrine and glycerin. Although the quantity of soda and sodium compounds exported advanced from 26,491,000 lbs. in February, 1924, to 26,605,000 lbs. in February, 1925, the value declined from \$775,000 to \$675,000. Larger amounts of borax, soda ash and sodium silicate were sent abroad this February than last. Of the total imports of acids and anhydrides which amounted to 4,420,000 lbs., valued at \$303,000 in February, 1925, white arsenic was the most important, with 1,589,000 lbs., valued at \$127,000. The imports of potassium bitartrate, crude, were approximately one quarter more than the preceding February, or a total receipt of 1,674,000 lbs., valued at \$112,000.

Colloid Chemistry

To the Editor of THE CHEMICAL AGE.

SIR,—When the fifth (and final) Report on "Colloid Chemistry and its General and Industrial Applications" was published for the British Association Colloid Committee, several letters appeared in the scientific journals expressing regret at the cessation of these valuable reports.

A nucleus committee of five members was appointed in September, 1923. This Committee is continuing the work on colloid chemistry along somewhat different lines. Mr. E. Hatschek has edited a collection of classical papers, many hitherto inaccessible, with the advice of the Committee. Messrs. Ernest Benn, Ltd., have just published these papers under the title: "Foundations of Colloid Chemistry."

The second new work of the Committee is the publishing of an annual report on the Progress of Colloid Chemistry, included in the Annual Report of the Chemical Society. The report for 1924 is now published.

The Committee has other work in progress, but the two ventures recently completed will serve to show that the interests of colloid chemistry are still being served.—I am, etc.,

WILLIAM CLAYTON,

Hon. Sec. to the British Association Colloid Committee.

Research Dept.,

The Salt Union, Ltd., Runcorn.

"Pyropruf": A New Roofing Material

A Product of Chemical Research

IN the presence of Government housing officials, fire brigade officers and others, a public fire-test is to be made in London on Thursday next, April 23, of a new flexible roofing material made of asphalt, for which the claim is made that it is non-inflammable and will not liquefy at extremely high temperatures.

For the test, which will take place at noon at the L.C.C. Stores Depot, Lupus Street, Vauxhall Bridge Road, three contiguous buildings will be erected, of which the two end ones will be roofed, one with slates, the other with tiles, and the centre one with the new asphalt roofing. The two end ones will be set on fire simultaneously, to show that the asphalt roof will not ignite from the outside. After this, the centre one will be ignited from within, to show that the asphalt roof will remain intact, even in direct contact with flame at a heat of from 3,000° to 4,000° F. Later, water will be poured on this intensely hot roof to show that there is no cracking or breaking, as with slates or tiles.

It is claimed for the new roofing material that it costs hardly one-third as much as tiles or slates, requires a lighter and, therefore, less expensive framework of beams, and is a much better insulator from heat or cold. If, therefore, it comes successfully through its tests, its use may have a considerable effect on the housing problem, though in many cases an amendment will be necessary of local bye-laws.

The new material, which has been named "Pyropruf," is the result of several years' research work by Mr. R. O. Child, chemist to D. Anderson and Son, Ltd., roofing felt manufacturers, of Manchester and London.

Smoke Nuisances in Chemical Works

At the Manchester City Police Court on Wednesday, April 8, several chemical manufacturing firms were summoned for permitting black smoke to issue from their works chimneys. In the case of Tennants (Lancashire), Ltd., of Clayton, Manchester, a representative of the firm said that they had no less than six different firemen attending to the boilers during the last month. An inspector of the Manchester Corporation stated that he had observed black smoke "bursts" for two and three minutes, amounting altogether to about ten minutes, during a period of half an hour in which he kept observation. In this case a fine of £10 was imposed. The Clayton Aniline Co., of Clayton, was fined £5 for the same offence, but a summons against Hardman & Holden, tar distillers, also of Clayton, for allowing the issue of black smoke for 5½ minutes in a period of ten minutes was withdrawn at the suggestion of the magistrates.

Chemical Matters in Parliament

French Printing Ink Importation

The President of the Board of Trade (House of Commons, April 7), in reply to a question, said that he was satisfied, on inquiry, that in the case of a request for a licence to import a certain printing ink that the refusal had resulted in the loss of a large order, that the Licensing Committee had followed their regular and proper practice.

Poison Gas Tests on Soldiers

Mr. Ammon (House of Commons, April 7) asked the Secretary of State for War if the 188 soldiers subjected to poison gas experiments at the Chemical Warfare Research Department since 1918 included officers; and what were the number of officers and men, respectively, subjected to such experiments?

Sir L. Worthington Evans said that the answer to the first part of the question was in the negative. The total number of officers and men of the Navy and Army subjected to the tests during the period in question was: Officers, 317; other ranks, 207.

Synthetic Indigo Imports

Sir P. Cunliffe-Lister (House of Commons, April 7), in reply to a question, said that the quantities of synthetic indigo imported under licence were, in 1921, nil; in 1922, 5,114 cwt.; in 1923, 8,274 cwt.; and in 1924, nil.

Indian Coke Production

Earl Winterton (House of Commons, April 9), in reply to a question, said that the output of coke in 1923—the latest available figure—was about 300,000 tons.

Manchester Merchant's £16,000 Liabilities

MR. J. GRANT GIBSON (the Official Receiver) held a first meeting of creditors at Manchester on Wednesday, April 8, of the firm of Rolstone and Abbott, Ltd., colour and dry-saltery merchants, of 40, Brazennose Street, Manchester. A statement showed liabilities estimated at £16,179, and no assets. Mr. Whittaker, managing director, attributed the cause of failure to arbitration awards against the company and losses through customers in India refusing shipments when prices had fallen.

The Official Receiver stated that the company was formed in 1917 as a private concern with a nominal capital of £3,000 in £1 shares, of which 1,500 were agreed to be issued as fully paid for the purchase price of another business. Of those shares, 1,480 were actually issued as partly paid to the extent of 11s. per share, as it was afterwards considered that the purchase price of £1,500 was too high. The net results of trading in the two years following registration of the company were £240 in 1918 and £601 in 1921, in which year the sales amounted to £50,151, which was the largest business done in any one year. Mr. Gibson expressed the opinion that further inquiry was necessary into the formation of the company, the conduct of its affairs, and its accounts. The matter was left in his hands.

Institute's New Assistant Secretary

MR. G. STANLEY W. MARLOW having tendered his resignation of the appointment of assistant secretary of the Institute of Chemistry on accepting a position with the Association of British Chemical Manufacturers, the Council has placed on record its high appreciation of his valuable services to the Institute during the past six years.

Mr. Ronald Leslie Collett, M.A. (Cantab.), F.I.C., has been appointed assistant secretary. He was educated at St. Paul's School, London, Trinity College, Cambridge, and King's College, London. He passed the Intermediate Examination of the Institute in 1909, and the Final Examination for the Associateship in the Chemistry of Food and Drugs in 1910; he was elected to the Fellowship in 1913. After five years' practical experience as assistant to Mr. A. Chaston Chapman, he was on active service for four years with the Middlesex Regiment and the R.A.M.C. After the war he was for two years chemist at the Royal Brewery, Brentford, and has since been chemist and bacteriologist with the British Leather Manufacturers' Research Association. He was for three years honorary secretary of the London and South Eastern Counties Section of the Institute and served for three years as a Member of Council.

From Week to Week

CLAY AND SONS, fertiliser manufacturers, of Stratford, celebrate their business jubilee this year.

GERMAN OIL PRODUCERS are stated to be endeavouring to induce the Government to restrict the importation of olein.

AT MIDNIGHT, April 9-10, the 26 per cent. levy ceased to be payable by British importers on goods entering the country.

A NATIONAL HIGH SCHOOL OF PETROLEUM and liquid fuels is to be established in Strasburg for the encouragement of research.

STATED TO HAVE DISCOVERED STAINLESS STEEL in 1911, Mr. Elwood Haynes has died. He was a member of the Iron and Steel Institute.

WE HAVE RECEIVED the latest bulletin of the Cleveland Scientific and Technical Institution, which gives abstracts of the most important scientific articles published during the preceding month.

SWITZERLAND'S EXPORTS during 1924 included chemicals valued at 23,979,000 francs and colours valued at 68,221,000 francs. Import figures were chemicals, 91,304,000 francs; colours, 15,776,000 francs.

MR. W. F. BARRETT, vice-president of the Linde Air Products, Ltd., who was associated with the first successful plant for producing helium, has received the honorary degree of D.Sc. from Pittsburg University.

SWEDEN NEEDS considerable supplies of paper chemicals—the sodium compounds group—according to reports. Great Britain and Germany are at present the main sources of supply but the American producers have gained a slight market.

AMERICA'S PRODUCTION OF RAYON FOR 1924 is estimated at 40,000,000 lb., and the world output at over 100,000,000 lb., with the chief European production in Great Britain, Germany, Italy, France, and Switzerland, in the order stated.

AN EXPLOSION in the waterproofing department of the Wellington Mills of Edward Macbean and Co., Port Dundas, Glasgow, on Thursday resulted in one death and several casualties. It ignited a roll of material that was being proofed and which contained naphtha.

FIRE CAUSED CONSIDERABLE DAMAGE at the premises of T. S. Jackson and Sons, Ltd., varnish and colour manufacturers of Malt Street, Old Kent Road, London, S.E., on Wednesday morning. Two floors used as waste paper and paint stores were involved and burned for several hours.

A RECEIVING ORDER IN BANKRUPTCY, on debtors' own petition, was made on March 14 against Hilda May Foster, married woman, and John Ascroft Molyneux, carrying on business at 23, 25 and 27, Rusholme Road, Manchester, under the style of The Alexandra Silk Co., artificial silk agents and merchants. The statement of affairs shows 25 unsecured creditors for £2,269, net assets estimated to produce £925, and a total deficiency of £1,595.

SIX PERSONS WERE INJURED by the explosion of a carboy containing nitric acid at the premises of T. and H. Smith, chemists, Virginia Street, Glasgow, on Wednesday, April 8. Without warning and with a loud report the carboy was hurled to the ceiling, and an assistant who was sprayed with the acid collapsed, suffering from severe burns to the head, face and feet. The acid burned through the floor and fell upon another workman in the cellar underneath. Only the upper part of his chest and back escaped burning. An ambulance man and several others were burnt by the acid. The cause is unknown.

THE GOLD MEDAL of the Institution of Mining and Metallurgy has been awarded to Dr. Richard Pearce, M.Inst.M.M., in recognition of his life-long services in the advancement of metallurgical science and practice. Dr. Pearce was for many years engaged in the direction of important metallurgical operations in the United States, and, since his return to England, has been occupied in developing the tin-smelting industry. The Council of the Institution has also awarded 'The Consolidated Gold Fields of South Africa' premium of 40 guineas to Mr. Thomas Pryor, M.Inst.M.M., for his paper on "The Underground Geology of the Kolar Gold Field"; and the "Arthur C. Claudet" and "William Frecheville" students' prizes of 10 guineas each to Mr. F. H. Edwards, B.Sc. (Birmingham), and Mr. D. W. Bishopp, A.R.S.M., respectively.

THE 29TH CHEMISTS' EXAMINATION will be held at Holland Park Hall, London, from May 4 to 8.

THE MANUFACTURE of alcohol from molasses is receiving the attention of the Australian Commonwealth authorities.

G. WADSWORTH AND SON, oil, paint, and varnish manufacturers of Halifax, attains its business centenary this year.

DR. A. TINGLE has succeeded Mr. F. W. Babington, who has retired, as chief chemist in the laboratories of the Canadian Department of Customs.

THE GOVERNMENT OF MADRAS is considering the question of controlling the export of oilcake and other indigenous fertilisers in view of the need of Indian cultivators for cheap fertilisers.

NORTH RIDING FARMERS' UNION at York on Tuesday supported the Union in its opposition to the application to bring superphosphates under the scope of the Safeguarding of Industries Act.

SIR MAX MUSPRATT will preside at a dinner to be given by the Liverpool district committee of the Federation of British Industries to the President of the Federation, Colonel the Hon. F. Vernon Willey, on May 19.

SOAPS TO THE VALUE OF OVER 22 million dinars are imported by Jugo-Slavia, chiefly from Greece, France, and Italy. Official reports state that producers could open up an even greater market and increased trade.

SODIUM FLUOSILICATE is to receive extensive tests as an insecticide against the boll weevil in the United States. At present calcium arsenate is the chief poison used, but it is anticipated that sodium fluosilicate will be used in large quantities shortly.

SYNTHETIC PRODUCTION OF METHYL ALCOHOL by catalytic reaction between carbon monoxide and hydrogen at high pressure and temperature has been developed at the Leuna-werke air fixation works at Merseburg, Germany, according to a Trade Commissioner's report. The resulting liquid is fractionally distilled for the alcohol, with a higher boiling fraction, and is a crude light oil suitable for motor spirits.

NEW CONCRETE ROADS include nine streets in Weymouth. At Portland the local District Council has embarked on the construction of a new concrete road, the present road having proved inadequate to stand the strain of the heavy lorries carrying Portland stone. The worst part of the road between Bognor and Littlehampton is also being relaid. It has been decided to use Ferrocrete, the new cement which has special quick-drying properties. These concrete roads not only have a non-skid surface, but also entail quite small maintenance charges.

WHALE OIL is to be produced in the open sea, according to a Norwegian report to the American Chemical Society. "A Norwegian whaling company," it is stated, "has been floated to engage in whaling in the open sea, following the whale passages off the coast of Africa in a southerly direction and in the South-Arctic Ocean. A large floating oil refinery will hand the whale carcasses on board in the open sea for flensing operations. This being a new procedure, special interest centres in the enterprise. It is estimated that the initial production will be about 30,000 barrels a year."

A PRESENTATION has been made to Mr. John Roberts, who has retired from the position of assistant manager at the Lancashire Metal Works of the United Alkali Co., Ltd. Mr. Roberts had worked at the metal works for over 50 years, during which time he had the record of only losing one day through illness. He started work as an office boy, in 1892 was appointed office manager and in 1914 became assistant manager. The presentation was made by Mr. J. Daintith, on behalf of the officials, foremen and workmen of the works, and took the form of a gold-mounted umbrella. A gold-mounted umbrella was also presented to Mrs. Roberts.

Obituary

MR. JAMES A. GORDON, 67, a manager in the postal department of Lever Brothers at Port Sunlight. He joined the firm at an early age and served in various departments. Four of his sons are connected with Lever Brothers.

MR. F. WHEEN, 56, for nineteen years chairman of Richard Whéen and Sons, Ltd., soap manufacturers, of Deptford.

DR. H. W. JULIUS, Professor of Experimental Physics at Utrecht University, at Utrecht on Wednesday, aged 64.

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- Calcium hydroxide gels. E. Justin-Mueller. *Rev. gén. des Colloïdes*, March, 1925, pp. 73-77.
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- REACTIONS.**—The interaction of ethyl hypochlorite with organic bodies. S. Goldschmidt, R. Endres and R. Dirsch. *Ber.*, March 11, 1925, pp. 572-577.
- New syntheses by means of organic peroxides. Parts II and III. H. Gelissen and P. H. Hermans. *Ber.*, March 11, 1925, pp. 476-481.
- REDUCTION.**—The reducing action of organo-magnesium halides. H. Rheinboldt and H. Roleff. *J. prakt. Chem.*, February, 1925, pp. 175-190.
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Patent Literature

Abstracts of Complete Specifications

230,590. HIGH-PERCENTAGE ALCOHOL, MANUFACTURE OF. E. Urbain and R. Urbain, 30, Avenue de l'Observatoire, Paris. Application date, January 23, 1924.

Alcohol of 99 per cent. purity can be obtained by means of the selective diffusion of alcohol and water vapours through a porous partition, from a mixture of alcohol vapour and water vapour.

The apparatus may comprise a still surmounted by a vertical tube containing within it a concentric porous tube. The aqueous alcohol passes through the porous tube, and the richer alcohol passes on to a condenser and back to the still. The alcohol remaining in the still ultimately rises to 99 per cent. strength. The difference in pressure between the two sides of the porous tube may be due to the pressure produced by the still, or to the partial vacuum produced by condensing the vapour which passes through the tube, or by a suction pump.

230,600. DYESTUFFS. R. F. Thomson, J. Thomas, and Scottish Dyes, Ltd., Murrell Hill Works, Carlisle. Application date, February 5, 1924.

It has been found that the beta chlorethyl ester of paratoluene sulphonic acid described in specification 193,618 (see THE CHEMICAL AGE, Vol. VIII, p. 349) will react with oxidation products of the ketonic perylenes described in specification 193,431 (see THE CHEMICAL AGE, Vol. VIII, p. 348), or with the reduced derivatives of these oxidation products. In an example, the oxidation product of dibenzanthrone is mixed with nitrobenzene and soda ash, and the water removed. The hot nitrobenzene solution is then treated with the beta-chlorethyl ester of paratoluene sulphonic acid, and the mixture refluxed. The mixture is then filtered and the colouring matter extracted from the residue with nitrobenzene. The product dyes cotton blue shades from an alkaline hydro-sulphate vat.

230,607. GAMMA-TETRA-HYDROQUINOLONE AND INTERMEDIATE PRODUCTS, MANUFACTURE OF. British Dyestuff Corporation, Ltd., 70, Spring Gardens, Manchester, W. H. Perkin and G. R. Clemon, Organic Chemical Laboratory, South Parks Road, Oxford. Application date, February 12, 1924.

To obtain gamma-tetra-hydroquinolone, toluene-*p*-sulphoanilide is condensed with β -chloro-propionic acid, yielding the toluene-*p*-sulphon derivative of β -phenyl-amino-propionic acid. This is treated with phosphorus oxychloride, when a ring closure takes place, yielding the toluene-*p*-sulphon derivative of chlor-tetra-hydroquinolone, which may be subjected to acid hydrolysis to obtain tetra-hydroquinolone. Phosphoric oxide in xylene solution can be used instead of phosphorus oxychloride, the same effect being produced. The product can be used in a number of synthetical operations. It may be treated with benzoyl chloride to obtain a monobenzoyl derivative, with phenyl-hydrazine to obtain the hydrazone, with benzaldehyde to obtain the benzal derivative. A nitroso derivative can be obtained, which, on simultaneous reduction and condensation with zinc and cyclohexanone gives the hydrazone; this may be treated with dilute sulphuric acid to obtain tetra-hydro-carbazole derivative.

It may be condensed with diketones like isatin. The carboxy acid loses carbon dioxide when heated, forming the base, and on further oxidation the quino-quinoline. A detailed example of the reactions is given.

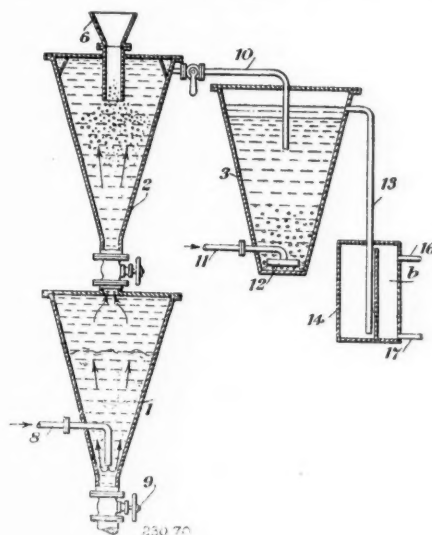
230,637. VULCANISATION OF CAOUTCHOUC. S. J. Peachey, 44, Platts Lane, Hampstead, London, and A. Skipsey, Hill Top, White Rose Lane, Woking, Surrey. Application date, March 26, 1924.

Rubber, either in solid form or in solution, can be vulcanised by treating with phosphorus trisulphide or pentasulphide in a solvent such as carbon disulphide or a mixture of carbon disulphide and benzene. The process is particularly adapted for the vulcanisation of dipped rubber articles and proofed fabrics, and for the production of moulded rubber goods from rubber solution. When employing a saturated

solution of phosphorus trisulphide in carbon disulphide (about 3 per cent. solution) the vulcanisation can be effected in about three minutes. In the production of articles from rubber solution, the solution is mixed with the vulcanising agent and poured into a mould. After gelling, the article is removed and the solvent evaporated. The phosphorus sulphides may also be incorporated with rubber in a mixing mill with cool rolls. Vulcanisation is subsequently effected on standing, or by heating to 100° C.

230,705. CRUDE AMMONIACAL LIQUORS, PURIFICATION OF. H. E. Potts, Liverpool. From Z. M. Stinnes, 1A, Beisingstrasse, Essen-Ruhr, Germany. Application date, July 25, 1924.

The crude ammoniacal liquor obtained by the distillation of coal is treated for the removal of tarry matter and phenols in two stages. The crude liquor is first treated with a solid



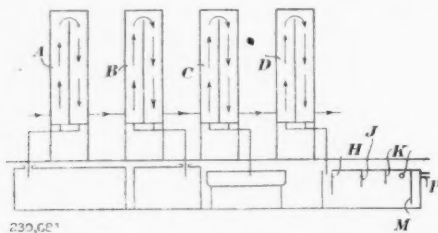
adsorbent such as calcium carbonate, alumina, sawdust, or charcoal, and the solid mass containing tar is removed. The liquor is then treated with benzene to extract the phenols, the solution is decanted, and the benzene is distilled off to obtain the pure phenols. The adsorbent is fed through a funnel 6 to a vessel 2, and the crude liquor enters the vessel 1 by a pipe 8. The liquor flows upwards through the two vessels at such a rate that the adsorbent remains in suspension in the middle of the vessel 2. The adsorbent and tarry matter finally settle to the bottom of the vessel 1, and are drawn off through a valve 9. The liquor overflows by a pipe 10 into the vessel 3, and benzene is admitted by the pipe 11 and rose 12. The mixture of water and benzene is removed through the pipe 13 into a vessel 14 and the liquor overflows into the vessel 15 where the benzene separates as a top layer and may be drawn off by a pipe 16 and distilled to recover the phenols and benzol. The benzol is thus not contaminated with tar, and may be used again. The purified ammoniacal liquor is drawn off through the pipe 17.

230,681. CREOSOTE OIL FROM CRUDE COAL GAS, PROCESS AND APPARATUS FOR THE RECOVERY OF. M. E. Nicklin, of the Wombwell Coke and Bye-Products Co., Ltd., Wombwell, Yorks. Application date, June 4, 1924.

In this process the less volatile constituents of coal gas are separated by fractional cooling. Gas from which the heavy tars have been removed substantially above 80° C. is treated to remove the light tars, and then cooled to condense the creosote oil. This has substantially the same properties as that employed for washing gas. Naphthalene is then removed by condensation, and benzene finally extracted by the aid of the creosote oil previously removed. The benzolised creosote

may be used to remove the last traces of uncondensed naphthalene.

The gas, freed from heavy tar, passes through a condenser A and is sprayed with hot tar to remove light tars, leaving the condenser at about 80° C. The gas then passes through condenser B at 60° to 70° C. when creosote oil and water



condense and are separated by decantation. Naphthalene then condenses in the condenser C, the outlet of which is at about 40° C., and the gas is finally cooled in condenser D to the temperature required for benzene extraction. The gas is sprayed with oils saturated with benzene to extract the light oils and naphthalene still remaining and to prevent the precipitation of naphthalene in the condenser. The oil and condensed water pass through a separator having weirs H, J, K, M at different depths. Oil is drawn off at P to the crude benzol still.

NOTE.—Abstracts of the following specifications, which are now accepted, appeared in THE CHEMICAL AGE, when they became open to inspection under the International Convention: 208,548 (Plauson's Parent Co., Ltd.) relating to centrifugal separators, see Vol. X, p. 202; 210,081 (Farbwerke vorm. Meister, Lucius and Brüning) relating to preparation of azo dye-stuffs, see Vol. X, p. 300; 213,250 (M. Naef and Co.) relating to manufacture of *d. 1-nerolidol*, see Vol. X, p. 547; 213,881 (Union Oil Co. of California) relating to a process for decolorising petroleum distillates, see Vol. X, p. 603; 214,210 (E. S. A. Cohen) relating to manufacture of dry, well-preserved rubber from latex, see Vol. X, p. 629; 215,004 (H. G. Flodin and E. G. T. Gustafsson) relating to production of volatile metals from their sulphides, see Vol. XI, p. 7 (Metallurgical Section); 216,527 (Chemische Fabrik Griesheim Elektron) relating to purification of gases intended for the manufacture of synthetic ammonia, see Vol. XI, p. 173; 221,773 (Rutgerswerke Akt.-Ges. and L. Kahl) relating to manufacture of pure, solid hydrocarbons from tars, see Vol. XI, p. 505; 222,120 (Farbwerke vorm. Meister, Lucius and Brüning) relating to manufacture of vat dyestuffs containing sulphur, see Vol. XI, p. 531; 223,878 (F. Caspari) relating to distillation of bituminous substances, see Vol. XII, p. 13.

International Specifications not yet Accepted

228,863. ESTERS. Soc. Chimique des Usines du Rhône, 21, Rue Jean-Goujon, Paris. International Convention date, February 7, 1924.

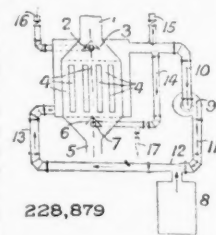
To obtain simple and compound malonic acid esters, the corresponding oxalylacetic esters are heated to 250°–350° C., when carbon monoxide is split off. In an example, ethyl oxalylacetate is passed down a vertical tube filled with coke heated to 370° C., or the vapour is passed over pumice heated to 305° C., and the product condensed. The process may be applied to ethylmethyl or ethyl-*n*-butyl oxalylacetate to obtain the corresponding malonate. The starting oxalylacetic esters are obtained by condensing ethyl oxalate with methyl or *n*-butyl acetate.

228,889. PURIFYING OILS. Aktiebolaget Separator, 8, Fleminggatan, Stockholm. (Assignees of C. H. Hapgood, Nutley, N.J., U.S.A., and G. F. Mayno, East Orange, N.J., U.S.A.) International Convention date, February 6, 1924.

Cotton oil, corn oil, peanut oil, and soya bean oil may be purified by treating with fullers' earth, silica gel, or diatomaceous earth, and the separated oil is then treated with the minimum of a saponifying agent required to remove the free fatty acids,

228,879. REGENERATING ADSORPTIVE CARBON, SILICA GEL, AND ALUMINA. Metallbank und Metallurgische Ges. Akt.-Ges., 45, Bockenheimer Anlage, Frankfurt-on-Main, Germany. International Convention date, February 6, 1924.

Adsorption media are regenerated, and the adsorbed substances liberated by heating at the lowest effective temperature. The heating gases may be conducted in a cycle in which combustible gas is burned with the minimum excess of air and the temperature then reduced with cool gas from the regenerator. The adsorption medium passes downwards into a chamber 1 over a deflector 2, and then in thin layers between the walls 4. The liberated adsorbed vapour passes out through the pipe 16, and the regenerated material is discharged at 5. Hot gas is generated at 8 and is circulated by a blower 9 through pipes 13, 10, 11, and then through an injector 12. Gas may be removed from the system by a pipe 15, or may be partly passed into the adsorption medium by a pipe 14 and distributor 7. This gas may be heated by a superheater or recuperator, or hot gas may be added by a pipe 17.



228,900. LEAD OXIDE. Goldschmidt Akt.-Ges., 18, Salkenbergsweg, Essen, Germany. International Convention date, February 8, 1924. Addition to 189,132.

Specification 189,132 (see THE CHEMICAL AGE, Vol. VIII., p. 103) describes the production of highly dispersed lead oxide by oxidising heating of lead or litharge to a white heat. In this invention, the gases with the dispersed lead oxide are suddenly cooled with cold air to 300°–500° C., to prevent deposition of lead oxide on the walls of the apparatus.

228,913. DYES AND LAKES. Farbwerke vorm. Meister, Lucius, and Brüning, Höchst-on-Main, Germany. International Convention date, February 8, 1924.

To obtain azo dyes in substance or on the fibre or in the form of lakes, diazo compounds are coupled with carbazylamides of 2:3-oxynaphthoic acid or a derivative having a free 1-position. Products in substance are obtained from diazotized *p*-nitraniline and 2:3-oxynaphthoyl-3-amino-carbazole; also tetrazotized benzidine and 2:3-oxynaphthoyl-3-amino-6-brom-*N*-ethyl-carbazole, and examples are also given of the production of dyes on the fibre. The carbazylamides of 2:3-oxynaphthoic acid are obtained as in the case of the known arylides.

LATEST NOTIFICATIONS.

231,817. Methods of and apparatus for filtering liquids or softening water. Wayne Tank and Pump Co. April 4, 1924.

231,818. Water-softening apparatus. Wayne Tank and Pump Co. April 4, 1924.

231,837. Processes of manufacture of cellulose esters or ethers in the midst of a solvent. Soc. Chimique des Usines du Rhône. April 2, 1924.

231,841. Manufacture of vinyl esters or ethers. Consortium für Elektro-Chemische Industrie Ges. April 1, 1924.

231,853. Process of obtaining sulphuric acid. Petersen, H. April 1, 1924.

231,867. Process for the use of mixtures of aluminous cements with ordinary cements. Soc. Lap. April 1, 1924.

231,885. Manufacture of new disazo dyes. Farbenfabriken vorm. F. Bayer and Co. April 4, 1924.

231,886. Manufacture of ortho-acetoxy-para-methoxybenzoic acid. Farbenfabriken vorm. F. Bayer and Co. April 4, 1924.

231,889. Manufacture of products for dyeing or printing textile fibres and other materials. Durand and Huguenin Soc. Anon. April 4, 1924.

231,897. Process of printing on acetyl-cellulose. Geigy Soc. Anon., J. R. March 31, 1923.

231,900. Process for neutralising mineral oils and hydrocarbons. Akt.-Ges. für Chemiewerte. April 5, 1924.

231,901. Method of performing chemical reactions. Akt.-Ges. für Chemiewerte. April 5, 1924.

Specifications Accepted with Date of Application

200,092. Vat-dyestuffs, Manufacture of. Farbwerke vorm. Meister, Lucius and Brüning. December 27, 1922.

214,629. Dyestuffs capable of being chromed, Manufacture of, Soc. of Chemical Industry in Basle. April 19, 1923.

- 227,450. Electric gas purifying plant. Siemens Schuckertwerke Ges. January 9, 1924.
 231,206. Dyes and the dyeing of acetyl silk. Scottish dyes, Ltd., E. G. Beckett, J. Thomas and R. Tonkin. September 14, 1923.
 231,211. Oxalates and other organic matter, Recovery of. H. Wade. (W. A. Fraymouth and Bhopal Produce Trust, Ltd.) October 25, 1923.
 231,218. Hydrogen or hydrogen-nitrogen mixtures, Manufacture of. J. Y. Johnson. (Badische Anilin und Soda Fabrik.) November 26, 1923.
 231,224. Chemical reactions in solutions, Process of effecting. M. Brutzkus. December 17, 1923.
 231,279. Purifying metals, Method of—and apparatus for. E. C. R. Marks. (Sumet Corporation.) February 4, 1924.
 231,285. Methyl alcohol and other oxygenated organic compounds, Manufacture of. J. Y. Johnson. (Badische Anilin und Soda Fabrik.) February 8, 1924.
 231,298. Carbonisation of fuel. H. E. Smith. February 28, 1924.
 231,334. Oils and other hydrocarbons, Fractional distillation of. D. Pyzel. April 22, 1924.
 231,342. Aryloxynaphthylketones, Manufacture of. Soc. of Chemical Industry in Basle, G. de Montmollin and G. Bonhote. May 7, 1924. Addition to 203,824.

Applications for Patents

- Akt.-Ges. für Chemiewerte. Process for neutralising mineral oils and hydrocarbons. 9,139. April 6. (Germany, April 5, 1924.)
 Akt.-Ges. für Chemiewerte. Method of performing chemical reactions. 9,140. April 6. (Germany, April 5, 1924.)
 Akt.-Ges. für Chemiewerte. Process for refining mineral oils. 9,141. April 6. (Germany, August 27, 1924.)
 Badische Anilin- und Soda-Fabrik, and Johnson, J. Y. Manufacture of formamide and hydrocyanic acid. 9,116. April 6.
 Distilleries des Deux-Sevres (formerly Soc. Ricard, Allenet, et Cie). Manufacture of ethers. 9,571. April 9. (France, May 24, 1924.)
 Dreyfus, H. Manufacture of aliphatic compounds. 9,500, 9,501, 9,502. April 9.
 Farbenfabriken vorm. F. Bayer and Co. Manufacture of disinfectants, insecticides, etc. 9,543. April 9. (Germany, April 10, 1924.)
 Farbwerke vorm. Meister, Lucius, and Brüning. Manufacture of indigoid dyestuffs. 9,283. April 7. (Germany, April 9, 1924.)
 Gross, Sherwood and Heald, Ltd., Phillips, R. A., and Thurlow, H. A. R. Manufacture of nitrocellulose varnishes. 9,567. April 9.
 Legeler, E. Purification of carbon disulphide. 9,557. April 9. (Germany, September 3, 1924.)
 Marks, E. C. R., and U.S. Industrial Alcohol Co. Composition for generating free iodine. 9,414. April 8.
 Soc. of Chemical Industry in Basle. Manufacture of azo dyestuffs. 9,572. April 9. (Switzerland, April 9, 1924.)
 Steffen, C. Production of a tricalcium saccharate. 9,266. April 7. (Austria, July 31, 1924.)
 Walker, E. E. Manufacture of phenol-formaldehyde resins. 9,560. April 9.

Salaries of Qualified Chemists

"KEMIKAL" (Glasgow) writes: "I should be pleased to learn through the medium of your paper the opinion of chemists as to the rate of remuneration of qualified chemists whose works and laboratory experience extends from six to fourteen years."

[So far as we are aware, there is no standard or minimum "rate" of remuneration for qualified chemists, and it would be difficult to suggest a figure without knowing more precisely the class of appointment in view and the character of the applicant's experience and qualifications. Obviously a chemist responsible for an important works or at the head of an important research department would be remunerated on a different scale from a subordinate works or laboratory chemist doing routine work. Everything depends on the man, the appointment, and, it may be added, the employing firm or company. The secretary of the Institute of Chemistry or of the British Association of Chemists would no doubt be glad to advise on a particular case, and the views of chemists as to their experience would certainly be interesting.—ED. C.A.]

Recent Will

Mr. Thomas Howell Williams Idris, of Brookfield, West Hill, Highgate, London, chemist and druggist and mineral water manufacturer.... £30,317

Inquest on London Chemical Merchant

An inquest was held at the City Coroner's Court, London, last week, on Archibald Henton Moate (53), chemical merchant, of Hounslow. Mr. Moate was found unconscious in his storeroom at 21, Mincing Lane, at noon on April 8, and died in an ambulance on the way to St. Bartholomew's Hospital. Harold Stanley Moate, an accountant, said his father had been in partnership with another man, but the partnership was dissolved. His father kept on the business, and the other man set up in the same line. He was much worried about business affairs, but his financial statement was in a good position.

Dr. Rose, who made a post-mortem examination, said that the man died from syncope due to poison by cyanide of potassium.

A police sergeant deposed to finding in deceased's clothes a number of articles, including a writ claiming damages for slander.

A discussion took place as to whether Mr. Moate's late partner, Mr. Le Mesurier, would give evidence, and it was agreed that he would. He said there was a mutual agreement to dissolve the partnership. Asked by the Coroner if he desired to say why he was compelled to issue the writ, he said that after the dissolution of the partnership "deceased stated in several quarters that I was not to be trusted, and would be bankrupt in three months."

As we go to press we learn that, at the resumed inquiry on Thursday, the jury found that Mr. Moate took his own life while temporarily of unsound mind.

Blinded Soldiers as Telephone Operators

It may not be generally known that one of the most successful occupations taught to the blinded soldiers at St. Dunstan's is telephone operating. A large number of these men have found employment with important business firms and organisations in London and the provinces, and have given great satisfaction. This may be because the freedom from outward distraction enables the blind operator to concentrate on his work to a much higher degree than is possible for a sighted operator. St. Dunstan's has several fully-trained men ready for work. There may be some readers extending their premises or faced with a necessary change in their present arrangements who might like to give a St. Dunstan's operator a trial. If so, the authorities at St. Dunstan's Headquarters (Inner Circle, Regent's Park, London, N.W.1) will gladly supply full particulars. (Telephone: Langham 2780.)

Death of Mr. A. Boake

THE death occurred on Easter Sunday of Mr. A. Boake, the chairman and founder of the firm of A. Boake, Roberts and Co., Ltd., Carpenters Road, Stratford.

Mr. Boake started the business in 1869 and was for over 50 years associated with Mr. Roberts in its administration. It was due to the enterprise and organisation of Mr. Boake that the firm attained its world-wide associations. He was well known abroad in the industry, particularly in France, where he had resided. Although over 80 years of age Mr. Boake had always taken a very active part in the affairs of the company until a few months ago when ill health limited his activities. He will be greatly missed by a very large circle of friends.

Water Power Resources of Canada

THE Dominion Water Power and Reclamation Service of the Department of the Interior of Canada has recently completed an analysis of the water-power resources of Canada, developed and undeveloped, as at February 1, 1925. It includes sections dealing with current progress and development, utilisation of developed water-power in the central electric stations, pulp and paper, and other leading industries, together with other data of general interest to all interested in the commercial possibilities of Canada.

Copies of this bulletin may be obtained free of charge on application to the High Commissioner for Canada, Kinnaird House, Pall Mall East, London, or to the Director of Water Power and Reclamation, Ottawa, Canada.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, April 17, 1925.

TRADE has, of course, hardly reopened after the holiday, and there is very little of general interest to report. Prices are practically without change. Export continues quiet.

General Chemicals

ACETONE has been in slightly better request and is worth about £77 per ton, ex wharf, main ports.

ACID ACETIC without change, and present price is £39 per ton for 80 technical, with pure being quoted at £40 to £41 per ton.

ACID BORIC.—English producers announce a reduction in price of all varieties of £5 per ton, which will make the price for crystal commercial quality £40 per ton, with usual difference for other grades.

ACID CITRIC is in a shade better demand and price is without change at 1s. 5d. per lb.

ACID FORMIC is quite active and the market is firm at £51 to £52 per ton for 85 per cent.

ACID LACTIC is in good request and is quoted at £43 per ton, ex wharf, with a rising tendency. Manufacturers are fully booked with orders.

ACID OXALIC.—Price is firm at 3½d. per lb. and stocks are in the main in strong hands.

ACID TARTARIC is unchanged at about 1s. per lb., less 5 per cent. ALUMINA SULPHATE is only moderately active, but price is without change.

ARSENIC, nominally quoted at £29 per ton, the market continues easy in the lack of export demand.

BARIUM CHLORIDE is firm and in good request, and the material is now quoted at about £11 per ton.

CREAM OF TARTAR is unchanged at £76 to £77 per ton.

EPSOM SALTS is a shade easier, but business has been quite active.

FORMALDEHYDE is steadier and is quoted at £43 per ton, ex store, but this price could probably be shaded for bulk business.

LEAD ACETATE is a shade easier owing to the decline in the metal. Price to-day is £46 for white and £44 for brown.

LIME ACETATE is only in poor demand, but the price seems to be a shade firmer. Grey is quoted at £15 10s. per ton, with brown at £11 per ton.

METHYL ALCOHOL is in better request and price is extremely firm at £50 per ton.

PRUSSIAN OF POTASH.—The weak holders that were in evidence a week or two ago appear to have been eliminated and the price is now very firm at 7½d. per lb.

SODA ACETATE continues idle and the price is easy at £21 10s. per ton.

SODIUM HYPOSULPHITE.—No changes in price are announced and only a moderate business is reported.

SODIUM PRUSSIAN.—Demand has slightly improved, but this has not reflected itself in the price quoted, which is 4d. per lb.

SODIUM NITRITE has been very active and the material is firm at £22 10s., ex warehouse.

SODIUM SULPHIDE is well called for and price is without change.

ZINC SULPHATE is in moderate request at £13 10s. per ton.

Coal Tar Products

There is little change in the market conditions since our last report. The quiet tone of the market is maintained, and business is somewhat upset, owing to the Easter holidays.

BENZOL 90% is steady at 1s. 8½d. per gallon on rails.

PURE BENZOL is valued at 1s. 10d. per gallon on rails.

CREOSOTE OIL has little business passing, and is worth 6½d. to 6¾d. per gallon on rails in the North, while the price in London is 7d. to 7½d. per gallon.

CRESYLIC ACID is dull, the pale quality 97/99% being quoted at 1s. 9d. per gallon on rails in bulk, while the dark 95/97% quality is quoted at 1s. 7d. to 1s. 8d. per gallon on rails.

SOLVENT NAPHTHA is steady at 1s. 3½d. to 1s. 4d. per gallon on rails.

HEAVY NAPHTHA is also steady at 1s. 1d. to 1s. 2d. per gallon on rails.

NAPHTHALENES are unchanged at £3 15s. to £4 5s. per ton for the lower qualities, while 74/76 quality is quoted at £5 to £5 10s. per ton, and 76/78 quality at £6 to £6 10s. per ton.

PITCH is still quiet. Prices are unchanged at 40s. to 42s. 6d. per ton, f.o.b. main U.K. ports.

Latest Oil Prices

LONDON.—LINSEED OIL closed quieter at 7s. 6d. to 12s. 6d. advance; spot, £46; April, £44 17s. 6d.; May-August, £45 7s. 6d.; September-December, £44 12s. 6d. RAPESEED firm; crude, crushed, spot, £48 10s.; technical, refined, £51 10s. COTTON OIL steady; refined common edible, £45; Egyptian crude, £40; deodorised, £47. TURPENTINE firm, but quiet, at a rise of 9d. per cwt.; American, spot, 63s. 6d.; and May, 63s. 9d.

HULL.—LINSEED.—Naked, spot to May-August, £45 5s.; September-December, £44 5s. COTTON OIL, naked, Bombay, crude, £37 10s.; Egyptian crude, £39 10s.; edible refined, £43; deodorised, £45 10s.; technical, £41. PALM KERNEL OIL, crushed, naked, £41 10s. GROUNDNUT OIL, crushed, extracted, £47; deodorised, £51. SOYA OIL, extracted, £39 10s.; crushed, £40 10s.; deodorised, £48. RAPE OIL, extracted, spot, £47 10s. per ton net cash terms, ex mill. CASTOR OIL, Pharmaceutical, 67s. to 68s.; first, 62s. to 63s.; second, 61s. to 62s. per cwt. net barrels (May, 2s. less; June, pharmaceutical and first, 2s. less, and second 3s. less). CON OIL, spot, 34s. to 35s. per cwt. barrels.

Nitrogen Products Market

Export.—The export demand continues steadily, and producers have been disposing of the quantities available at about £13 10s. per ton f.o.b. On account of the heaviness of the home bookings, only 7,000 to 8,000 tons have been sold for prompt shipment; most of this has been for consumption on the Continent. There is very little interest in later shipment.

Home.—The Home demand continues on the usual large scale for this season of the year. The producers dispose of 500 to 600 tons daily. The demand is regular from all parts of the country, and from Ireland. The Home price, £14 14s. per ton for neutral quality, basis 21½ per cent. nitrogen, delivered to consumer's nearest station, will remain unchanged until the end of May.

Nitrate of Soda.—The increased buying of nitrate in the United States has had a steadying effect on the market, but the failure of European consumption to come up to producers' estimates has caused the European buyers to hold off. Cargoes for prompt arrival can be purchased at about £11 15s. per ton c.i.f. There seems no doubt that there will be a large stock of nitrate carried into the new fertiliser year.

American Market Movements

(From Drug and Chemical Markets.)

HEAVY chemicals show slight change. Domestic makers continue to report large contract withdrawals. Importers report March totals sharply below February. Potassium chlorate up to 7½ c. lb. for shipment.

Light oil distillates easier owing to unsettled condition of the gasoline market. R-salt lower. Intermediates remain in slight demand. Vegetable oils show a slight gain in strength over the week. Chinawood and linseed oils in better demand. Animals oils hold firm positions, although tallow remains unsettled.

Fine chemicals quiet with some added strength. Mercury, menthol and camphor up. Large imports synthetic methanol continue. Isopropanol down.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at retailers' works.

General Heavy Chemicals

Acid Acetic, 40% Tech.—£21 to £23 per ton.
 Acid Boric, Commercial.—Prices reduced by £5 per ton. Crystal, £40 per ton, Powder, £42 per ton.
 Acid Hydrochloric.—3s. 9d. to 6s. per carboy d/d., according to purity, strength and locality.
 Acid Nitric, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
 Acid Sulphuric.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 65s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
 Ammonia Alkali.—£6 15s. per ton f.o.r. Special terms for contracts.
 Bleaching Powder.—Spot, £10 10s. d/d.; Contract, £10 d/d. 4 ton lots.
 Bisulphite of Lime.—£7 10s. per ton, packages extra, returnable.
 Borax, Commercial.—Crystal, £25 per ton. Powder, £26 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)
 Calcium Chlorate (Solid).—£5 12s. 6d. to £5 17s. 6d. per ton d/d, carriage paid.
 Copper Sulphate.—£25 to £25 10s. per ton.
 Methylated Spirit 64 O.P.—Industrial, 2s. 7d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.
 Nickel Sulphate.—£38 per ton d/d. Normal business.
 Nickel Ammonia Sulphate.—£38 per ton d/d. Normal business.
 Potash Caustic.—£30 to £33 per ton.
 Potassium Bichromate.—5d. per lb.
 Potassium Chlorate.—2½d. to 3d. per lb.
 Sal ammoniac.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton. Carr. pd.
 Salt Cake.—£3 15s. to £4 per ton d/d. In bulk.
 Soda Caustic, Solid.—Spot lots delivered, £15 12s. 6d. to £18 per ton, according to strength; 20s. less for contracts.
 Soda Crystals.—£5 to £5 5s. per ton ex railway depots or ports.
 Sodium Acetate 97/98%.—£24 per ton.
 Sodium Bicarbonate.—£10 10s. per ton, carr. paid.
 Sodium Bichromate.—4d. per lb.
 Sodium Bisulphite Powder 60/62%.—£16 to £17 per ton, according to quantity, f.o.b., 1-cwt. iron drums included.
 Sodium Chlorate.—2½d. per lb.
 Sodium Nitrate refined 96%.—£13 5s. to £13 10s. per ton, ex Liverpool. Nominal.
 Sodium Nitrite 100% basis.—£27 per ton d/d.
 Sodium Sulphate (Glauber Salts).—£3 12s. 6d. per ton.
 Sodium Sulphide conc. solid. 60/65.—About £15 per ton d/d. Contract £14 15s. Carr. pd.
 Sodium Sulphide Crystals.—£9 5s. per ton d/d. Contract £9 2s. 6d. Carr. pd.
 Sodium Sulphide, Pea Crystals.—£15 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

Acid Carboic Crystals.—5d. per lb. Quiet demand. Crude 60's, 1s. 5d. to 1s. 7d. per gall. Little demand.
 Acid Cresylic 97/99.—1s. 8d. to 2s. per gall. Rather more inquiry.
 Pale, 95%, 1s. 6d. to 1s. 10d. per gall. Dark, 1s. 6d. to 1s. 9d. per gall. Little demand.
 Anthracene Paste 40%.—4d. per unit per cwt.—Nominal price. No business.
 Anthracene Oil, Strained.—7d. to 8d. per gall. Unstrained, 6d. to 7d. per gall.
 Benzol.—Crude 65's.—9d. to 11½d. per gall., ex works in tank wagons. Standard Motor, 1s. 4½d. to 1s. 6d. per gall., ex works in tank wagons. Pure, 1s. 9½d. to 1s. 11d. per gall., ex works in tank wagons. Supplies very scarce.
 Toluol.—90%, 1s. 7d. per gall. More inquiry. Pure, 1s. 10d. to 2s. per gall. Steady demand.
 Xylol Commercial.—2s. 3d. per gall. Pure, 3s. 3d. per gall.
 Creosote.—Cresylic, 20/24%, 8½d. to 8½d. per gall. Little demand. Middle Oil, Heavy, Standard specification, 6d. to 7d. per gall., according to quality and district. Market not quite so firm.
 Naphtha.—Crude, 8d. to 9d. per gall. Solvent 90/100, 11d. to 1s. 1d. per gall. Steady business.
 Naphthalene Crude.—Cheaper in Yorkshire than in Lancashire. Drained Creosote Salts, £3 to £5 per ton. Steady but quiet. Whizzed or hot pressed. £6 to £9 per ton.
 Naphthalene.—Crystals and Flaked, £12 to £15 per ton, according to districts.
 Pitch.—Medium soft, 37s. 6d. to 42s. 6d. per ton, according to district. Not much business.
 Pyridine.—90/100, 17s. 6d. to 18s. per gall. Market easier. Fair demand. Heavy, 11s. to 12s. per gall. Not much inquiry.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated.

Acetic Anhydride 95%.—1s. 7d. per lb.
 Acid H.—3s. 9d. per lb. 100% basis d/d.
 Acid Naphthionic.—2s. 2d. per lb. 100% basis d/d.
 Acid Neville and Winther.—5s. 8d. per lb. 100% basis d/d.
 Acid Salicylic, technical.—11½d. to 1s. per lb. Price reduced. Improved demand.
 Acid Sulphanilic.—9d. per lb. 100% basis d/d.
 Aluminium Chloride, anhydrous.—10d. per lb. d/d.
 Aniline Oil.—7½d. per lb. naked at works.
 Aniline Salts.—8d. per lb. naked at works.
 Antimony Pentachloride.—1s. per lb. d/d.
 Benzidine Base.—3s. 8d. per lb. 100% basis d/d.
 Benzyl Chloride 95%.—1s. 1d. per lb.
 p-Chlorophenol.—4s. 3d. per lb. d/d.
 p-Chloraniline.—3s. per lb. 100% basis.
 o-Cresol 29/31° C.—3d. per lb. Demand quiet.
 m-Cresol 98/100%.—2s. 1d. to 2s. 3d. per lb. Demand moderate.
 p-Cresol 32/34° C.—2s. 1d. to 2s. 3d. per lb. Demand moderate.
 Dichloraniline.—2s. 3d. per lb.
 Dichloraniline S. Acid.—2s. 3d. per lb. 100% basis.
 p-Dichlorbenzol.—£85 per ton.
 Diethylaniline.—4s. 3d. per lb. d/d., packages extra, returnable.
 Dimethylaniline.—2s. 2d. per lb. d/d. Drums extra.
 Dinitrobenzene.—9d. per lb. naked at works.
 Dinitrochlorbenzol.—£84 10s. per ton d/d.
 Dinitrotoluene.—48/50° C. 8d. to 9d. per lb. naked at works. 66/68° C. 1s. per lb. naked at works.
 Diphenylaniline.—2s. 10d. per lb. d/d.
 G. Salt.—2s. 2d. per lb. 100% basis d/d.
 Monochlorbenzol.—£63 per ton.
 a-Naphthol.—2s. 3d. per lb. d/d.
 B-Naphthol.—1s. per lb. d/d.
 a-Naphthylamine.—1s. 3½d. per lb. d/d.
 B-Naphthylamine.—3s. 9d. per lb. d/d.
 m-Nitraniline.—4s. 2d. per lb. d/d.
 p-Nitraniline.—2s. 2d. per lb. d/d.
 Nitrobenzene.—5½d. to 5½d. per lb. naked at works.
 o-Nitrochlorbenzol.—2s. 3d. per lb. 100% basis d/d.
 Nitronapthalene.—10d. per lb. d/d.
 p-Nitrophenol.—1s. 9d. per lb. 100% basis d/d.
 p-Nitro-o-amido-phenol.—4s. 6d. per lb. 100% basis.
 m-Phenylene Diamine.—4s. per lb. d/d.
 p-Phenylene Diamine.—9d. 9d. per lb. 100% basis d/d.
 R. Salt.—2s. 4d. per lb. 100% basis d/d.
 Sodium Naphthionate.—2s. 2d. per lb. 100% basis d/d.
 o-Toluidine.—10d. per lb.
 p-Toluidine.—2s. 3d. per lb. naked at works.
 m-Toluyene Diamine.—4s. per lb. d/d.

Wood Distillation Products

Acetate of Lime.—Brown £11. Quiet market. Grey, £15 10s. per ton. Firmer. Liqueur, 9d. per gall. 32° Tw.
 Acetone.—£78 per ton.
 Charcoal.—£7 5s. to £9 per ton, according to grade and locality. Fair demand.
 Iron Liqueur.—1s. 7d. per gall 32° Tw. 1s. 2d. per gall. 24° Tw.
 Red Liqueur.—10d. to 1s. per gall. 14/15° Tw.
 Wood Creosote.—2s. 9d. per gall. Unrefined.
 Wood Naphtha, Miscible.—4s. 9d. per gall. Only moderate market. 60% O.P. Solvent, 5s. per gall. 40% O.P.
 Wood Tar.—£4 to £5 per ton. Demand slack and stocks being held.
 Brown Sugar of Lead.—£43 10s. per ton.

Rubber Chemicals

Antimony Sulphide.—Golden, 7½d. to 1s. 5d. per lb., according to quality. Crimson, 1s. 5d. to 1s. 7½d. per lb., according to quality.
 Arsenic Sulphide, Yellow.—2s. per lb.
 Cadmium Sulphide.—4s. 4d. per lb., according to quantity.
 Carbon Bisulphide.—£32 to £35 per ton, according to quantity.
 Carbon Black.—6d. to 6½d. per lb., ex wharf.
 Carbon Tetrachloride.—£62 to £67 per ton, according to quantity, drums extra.
 Chromium Oxide, Green.—1s. 4d. per lb.
 Indiarubber Substitutes, White and Dark.—5½d. to 7½d. per lb.
 Lamp Black.—£48 per ton, barrels free.
 Lead Hyposulphite.—9d. per lb.
 Lithopone, 30%.—£22 10s. per ton.
 Mineral Rubber "Rubpron".—£16 to £18 per ton f.o.r. London.
 Sulphur.—£10 to £12 per ton, according to quality.
 Sulphur Chloride.—4d. per lb., carboys extra.

Sulphur Precip. B.P.—£56 to £65 per ton.
 Thiocarbamide.—2s. 6d. per lb.
 Vermilion, Pale or Deep.—5s. 6d. per lb. Dearer.
 Zinc Sulphide.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

Acid, Acetic 80% B.P.—£42 per ton ex wharf London in glass containers.
 Acid, Acetyl Salicylic.—2s. 9d. to 2s. 10d. per lb., according to quantity. Market slightly easier.
 Acid, Benzoic B.P.—2s. to 2s. 3d. per lb., according to quantity, for synthetic product.
 Acid, Boric B.P.—Prices reduced by £5 per ton. Crystal £46 per ton, Powder £50 per ton. Carriage paid any station in Great Britain.
 Acid, Camphoric.—19s. to 21s. per lb.
 Acid, Citric.—1s. 4½d. per lb., less 5% for ton lots. Slightly upward tendency.
 Acid, Gallic.—2s. 9d. per lb. for pure crystal, in cwt. lots. Easier.
 Acid, Pyrogallic, Crystals.—6s. per lb. for 1 cwt. lots. 7s. 6d. per lb. for 7-lb. lots, according to quantity. Steady market.
 Acid, Salicylic.—1s. 5½d. to 1s. 6d. per lb., according to quantity. Market rather easier.
 Acid, Tannic B.P.—2s. 9d. per lb. Quiet steady demand.
 Acid, Tartaric.—1s. 1d. per lb., less 5%. Very firm. Demand good.
 Amidol.—9s. per lb., d d.
 Acetanilide.—1s. 9d. per lb. Price lower owing to competition.
 Amidopyrin.—14s. per lb.
 Ammonium Benzoate.—3s. to 3s. 6d. per lb., according to quantity.
 Ammonium Carbonate B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks.
 Atropine Sulphate.—12s. 6d. per oz. for English make.
 Barbitone.—11s. 9d. per lb. Price lower owing to competition.
 Benzonaphthol.—4s. 3d. per lb. spot. Weaker. Demand quiet.
 Bismuth Salts.—Prices reduced by about 1s. 3d. to 2s. 3d. per lb. on account of the fall in the price of the metal.
 Bismuth Carbonate.—10s. 6d. to 12s. 6d. per lb. } The price of Bismuth
 Bismuth Citrate.—10s. 3d. to 12s. 3d. per lb. } Metal has been raised
 Bismuth Salicylate.—9s. to 11s. per lb. } from 5s. to 7s. 6d. per lb.
 Bismuth Subnitrate.—8s. 8d. to 10s. 8d. per lb. } Bismuth Salts have been
 according to quantity. } advanced accordingly.
 Borax B.P.—Crystal £29, Powder £30 per ton. Carriage paid any station in Great Britain.
 Bromides.—Potassium, 1s. 7d. to 1s. 9d. per lb.; sodium, 1s. 8d. to 1s. 11d. per lb.; ammonium, 2s. to 2s. 3d. per lb., all spot. Upward tendency. Forward prices higher.
 Calcium Lactate.—1s. 7d. to 1s. 9d., according to quantity. Fair demand and steady market.
 Chloral Hydrate.—3s. 10d. per lb., duty paid.
 Chloroform.—2s. 6d. per lb. for cwt. lots.
 Creosote Carbonate.—6s. 9d. per lb. Little demand.
 Formaldehyde.—£42 per ton, in barrels ex wharf.
 Glycerophosphates.—Fair business passing. Calcium, soluble and citrate free, 7s. per lb.; iron, 8s. 9d. per lb.; magnesium, 9s. per lb.; potassium, 50%, 3s. 6d. per lb.; sodium, 60%, 2s. 6d. per lb.
 Guaiacol Carbonate.—7s. 10d. to 8s. per lb.
 Hexamine.—2s. 9d. per lb. for cwt. lots. For bold crystal.
 Homatropine Hydrobromide.—25s. to 30s. per oz.
 Hydrastine Hydrochloride.—English make offered at 120s. per oz.
 Hydrogen Peroxide (12 vols.).—1s. 8d. per gallon f.o.r. makers' works, naked.
 Hydroquinone.—4s. 3d. per lb. Nominal.
 Hypophosphites.—Calcium, 3s. 6d. per lb., for 28 lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
 Iron Ammonium Citrate B.P.—1s. 11d. to 2s. 3d. per lb.
 Magnesium Carbonate.—Light Commercial, £36 per ton net. Light pure, £46 per ton.
 Magnesium Oxide.—Light Commercial, £72 10s. per ton, less 2½%; price reduced; Heavy Commercial, £25 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.
 Menthol.—A.B.R. recrystallised B.P., 43s. 6d. per lb.; April delivery. Synthetic 26s. to 35s. per lb., according to quality.
 Mercurials.—Market very quiet. Mercury slightly firmer. Red oxide, 5s. 2d. to 5s. 4d. per lb.; Corrosive sublimate, 3s. 7d. to 3s. 9d. per lb.; white precipitate, 4s. 6d. to 4s. 8d. per lb.; Calomel, 3s. 10d. to 4s. per lb.
 Methyl Salicylate.—1s. 7d. to 1s. 11d. per lb., according to quantity.
 Methyl Sulphonal.—19s. 3d. per lb. Cheaper.
 Metol.—11s. per lb. British make.
 Morphone and Salts.—Reduced by 1s. to 1s. 3d. per oz.
 Paraformaldehyde.—2s. 2d. for B.P. quality. Keen competition has brought prices down.
 Paraldehyde.—1s. 2d. to 1s. 5d. per lb., in free bottles and cases.
 Phenacetin.—4s. 9d. per lb. in cwt. lots. Unsettled. Supplies exceed demand.
 Phenazone.—6s. 3d. to 6s. 6d. per lb. Spot price lower than forward.
 Phenolphthalein.—4s. 6d. to 5s. per lb. for cwt. lots.
 Potassium Bitartrate 99/100% (Cream of Tartar).—83s. per cwt., less 2½% for ton lots.
 Potassium Citrate.—1s. 10d. to 2s. 2d. per lb.

Potassium Ferricyanide.—1s. 9d. per lb. Quiet.
 Potassium Iodide.—16s. 8d. to 17s. 5d. per lb., according to quantity. Steady market.
 Potassium Metabisulphite.—7½d. per lb., 1-cwt. kegs included. f.o.r. London.
 Potassium Permanganate.—B.P. crystals, 7½d. per lb. spot; commercial, 8d. to 8½d. per lb., carriage paid. Slight reaction after recent advance.
 Quinine Sulphate.—2s. 3d. to 2s. 4d. per oz., in 100 oz. tins. Steady market.
 Resorcin.—4s. 9d. per lb. In fair quantities. Supplies exceed demand.
 Saccharin.—63s. per lb. in 50 lb. lots.
 Salol.—3s. 6d. per lb., for cwt. lots. Slightly dearer.
 Silver Proteinate.—12s. per lb. for satisfactory product light in colour.
 Sodium Benzoate, B.P.—1s. 10d. to 2s. 2d. per lb. From natural benzoic acid. Supplies of good quality available.
 Sodium Citrate, B.P.C., 1923.—1s. 11d. to 2s. 2d. per lb., according to quantity.
 Sodium Hyposulphite, Photographic.—£14 to £15 per ton, according to quantity, d/d consignee's station in 1-cwt. kegs.
 Sodium Metabisulphite Crystals.—37s. 6d. to 60s. per cwt., net cash, according to quantity.
 Sodium Nitroprusside.—16s. per lb.
 Sodium Potassium Tartrate (Rochelle Salt).—75s. per cwt., for ton lots and upwards.
 Sodium Salicylate.—Powder, 2s. 2d. to 2s. 3d. per lb. Crystal, 2s. 3d. to 2s. 5d. per lb. Flake, 2s. 6d. per lb. Strong demand, market firmer.
 Sodium Sulphide, pure recrystallised.—10d. to 1s. 2d. per lb.
 Sodium Sulphite, anhydrous, £27 10s. per ton, minimum 5 ton lots, according to quantity; 1-cwt. kegs included.
 Sulphonal.—13s. per lb. accepted for quantity.
 Thymol.—18s. per lb. Firmer.

Perfumery Chemicals

Acetophenone.—10s. 9d. per lb.
 Aubepine.—11s. 3d. per lb.
 Amyl Acetate.—3s. per lb.
 Amyl Butyrate.—6s. 6d. per lb.
 Amyl Salicylate.—3s. 1½d. per lb.
 Anethol (M.P. 21/22° C.).—4s. 6d. per lb.
 Benzyl Acetate from Chlorine-free Benzyl Alcohol.—2s. 7½d. per lb.
 Benzyl Alcohol free from Chlorine.—2s. 7½d. per lb.
 Benzaldehyde free from Chlorine.—3s. 1½d. per lb.
 Benzyl Benzoate.—3s. 1½d. per lb.
 Cinnamic Aldehyde Natural.—16s. per lb.
 Coumarin.—16s. per lb.
 Citronellol.—22s. per lb.
 Citral.—10s. per lb.
 Ethyl Cinnamate.—10s. per lb.
 Ethyl Phthalate.—3s. per lb.
 Eugenol.—10s. 6d. per lb.
 Geraniol (Palmarosa).—28s. 6d. per lb.
 Geraniol.—9s. 6d. to 26s. 6d. per lb.
 Heliotropine.—6s. 3d. per lb.
 Iso Eugenol.—15s. per lb.
 Linalol ex Bois de Rose.—24s. 6d. per lb.
 Linalyl Acetate.—24s. 6d. per lb.
 Methyl Anthranilate.—10s. per lb.
 Methyl Benzoate.—5s. per lb.
 Musk Ambrette.—50s. per lb.
 Musk Ketone.—42s. 6d. per lb.
 Musk Xylol.—11s. per lb.
 Nerolin.—4s. 6d. per lb.
 Phenyl Ethyl Acetate.—15s. per lb.
 Phenyl Ethyl Alcohol.—14s. per lb.
 Rhodinol.—40s. per lb.
 Saffrol.—1s. 10d. per lb.
 Terpeneol.—2s. per lb.
 Vanillin.—25s. to 25s. 6d. per lb.

Essential Oils

Almond Oil, Foreign S.P.A.—13s. 9d. per lb.
 Anise Oil.—2s. 9d. per lb.
 Bergamot Oil.—16s. per lb.
 Bourbon Geranium Oil.—22s. 6d. per lb.
 Camphor Oil.—62s. 6d. per cwt.
 Cananga Oil, Java.—11s. per lb.
 Cinnamon Oil, Leaf.—6d. per oz.
 Cassia Oil, 80/85%.—10s. per lb.
 Citronella Oil.—Java, 85/90%, 4s. 10d. per lb. Ceylon, 2s. 10d. to 3s. 1d. per lb., according to quality.
 Clove Oil.—7s. 6d. per lb.
 Eucalyptus Oil, 70/75%.—2s. per lb.
 Lavender Oil.—French 38/40% Esters, 35s. per lb.
 Lemon Oil.—3s. 9d. per lb.
 Lemongrass Oil.—5s. 9d. per lb.
 Orange Oil, Sweet.—11s. 3d. per lb.
 Palma Rose Oil.—15s. 3d. per lb.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, April 17, 1925.

POSSIBLY on account of the holidays intervening, the heavy chemical market was rather quieter during the past week, and there is nothing of importance to record. Prices remain fairly steady with the exception of boracic acid, against which manufacturers advise a reduction of £5 per ton.

ACID ACETIC.—In moderate demand and prices generally unchanged. 98 100% Glacial, £56 to £67 per ton, according to quality and packing. 80% Pure, £41 to £43 per ton. 80% Technical, £40 to £42 per ton, packed in casks delivered c.i.f. U.K. ports. Some spot parcels of 80% technical quality offered from the continent at slightly below the above figure.

ACID BORACIC.—Crystal, granulated or small flaked at £40 per ton. Powdered £42 per ton, carriage paid U.K. stations, minimum ton lots.

ACID CARBOLIC ICE CRYSTALS.—Spot material unchanged at about 5½d. per lb. delivered. Offered for forward delivery at a fraction less.

ACID CITRIC, B.P. CRYSTALS.—Unchanged at about 1s. 4½d. per lb., less 5%, ex store, spot delivery. In usual steady demand.

ACID FORMIC 85%.—Quoted £50 per ton, ex wharf, early delivery. Offered for early delivery at £49 per ton, c.i.f. U.K. ports.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC 80%.—£23 18s. per ton, ex station, full truck loads.

ACID OXALIC 98/100%.—Unchanged at 3½d. per lb., ex wharf, early delivery. Spot material quoted at 4d. per lb., ex store, but could probably be obtained at a fraction less.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Unchanged at about 11½d. per lb., less 5%, ex store.

ALUMINA SULPHATE, 17/18% IRON FREE.—Spot material on offer at about £7 per ton, ex store. Offered for prompt shipment from the continent at about £6 10s. per ton, c.i.f. U.K. port.

ALUM LUMP POTASH.—Spot material unchanged at about £9 10s. per ton, ex store. Offered for prompt shipment from the continent at £8 7s. 6d., c.i.f. U.K. ports.

AMMONIA ANHYDROUS.—Quoted 1s. 4½d. per lb., ex station. Containers extra and returnable.

AMMONIA CARBONATE.—Lump £37 per ton. Powdered £39 per ton, packed in 5 cwt. casks delivered U.K. ports.

AMMONIA LIQUID 880°.—In steady demand. Unchanged at 2½d. to 3d. per lb. delivered according to quantities.

AMMONIA MURIATE 880°.—Grey galvaniser's crystals, English manufacture, quoted at £29 per ton, ex store.

ARSENIC, WHITE POWDERED.—Unchanged at £28 10s. per ton, ex store. Continental material quoted £25 10s. per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Spot material of English manufacture quoted £10 10s. per ton, ex store. Foreign material on offer at about £9 per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—Spot lots quoted £10 10s. per ton, ex station. Contracts 20s. per ton less.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BORAX.—Remains unchanged. Granulated £24 10s. per ton. Crystals £25 per ton. Powdered £26 per ton, carriage paid U.K. stations, minimum ton lots.

CALCIUM CHLORIDE.—English makers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, ex station. Continental quoted £3 15s. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 5s. per ton, ex works, packed in casks, free.

COPPER SULPHATE.—English material unchanged at about £24 10s. per ton, f.o.b. U.K. port. Continental quoted about £22 10s. to £23 per ton, c.i.f. U.K. ports.

FORMALDEHYDE 40%.—Spot material quoted £42 10s. per ton, ex store. Offered for prompt shipment from the continent at about £40 per ton, ex wharf.

GLAUBER SALTS.—White crystals of English manufacture quoted £4 per ton, ex store or station. Continental on offer at about £3 10s. per ton, c.i.f. U.K. port.

LEAD, NITRATE.—Offered for prompt delivery at £42 per ton, delivered.

LEAD, RED.—Imported material unchanged at about £43 per ton, ex store, spot delivery.

LEAD, WHITE.—An offer at £44 10s. per ton, ex store.

MAGNESITE, CALCINED.—Quoted £8 per ton, ex station, prompt delivery.

MAGNESIUM, CHLORIDE.—Quoted £2 15s. per ton, c.i.f. U.K. port, prompt shipment.

POTASH, CAUSTIC, 88/92%.—Unchanged at about £29 per ton, ex wharf, prompt shipment from the continent. Spot material available at about £30 10s. per ton, ex store.

POTASSIUM, BICHROMATE.—Prices for home consumption, 5d. per lb. delivered.

POTASSIUM, CARBONATE, 96/98%.—Spot material unchanged at about £25 15s. per ton, ex store. Offered for prompt shipment from the continent at about £25 5s. per ton, c.i.f. U.K. port.

POTASSIUM, CHLORATE.—Still very scarce. Spot material quoted as high as 4d. per lb., ex store.

POTASSIUM, NITRATE, SALTPETRE.—Refined granulated 99% quoted £24 10s. per ton, c.i.f. U.K. ports. Spot material available at about £28 per ton, ex store.

POTASSIUM, PERMANGANATE, B.P. CRYSTALS.—Quoted 7½d. per lb., ex store. Offered for early delivery at 7½d. per lb., ex wharf.

POTASSIUM, PRUSSIAN, YELLOW.—Now quoted at 7½d. per lb., ex store, spot delivery.

SODA CAUSTIC.—76 77%, £18 per ton. 70/72%, £16 12s. 6d. per ton. Broken, 60%, £17 2s. 6d. per ton. Powdered, 98/99%, £21 7s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts 20s. per ton less.

SODIUM, ACETATE.—On offer from the continent at about £19 10s. per ton, c.i.f. U.K. ports. Spot material quoted £21 10s. per ton, ex store.

SODIUM, BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM, CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, £1 7s. 6d. per ton more. (Alkali, 58%), £8 12s. 3d. per ton, ex quay or station.

SODIUM, HYPOSULPHITE.—English material unchanged at £9 15s. per ton, ex station. Continental quoted £8 10s. per ton, c.i.f. U.K. ports. Spot material of continental manufacture available at about £9 15s. per ton, ex store. Pea crystals of English manufacture unchanged at £14 per ton, ex station.

SODIUM NITRATE.—Ordinary quality quoted £13 7s. 6d. per ton, ex store. 96/98%, refined quality, 7s. 6d. per ton extra.

SODIUM NITRITE, 100%.—Offered from the continent at about £23 per ton, c.i.f. U.K. ports. Spot material available at about £24 15s. per ton, ex store.

SODIUM PRUSSIAN, YELLOW.—Quoted 4½d. per lb., ex store. In moderate demand for export.

SODIUM SULPHATE, SALTCAKE.—Prices for home consumption £3 10s. per ton, f.o.b. works. Good enquiry for export and higher prices obtainable.

SODIUM SULPHIDE.—English manufacturers quote: 60/62%, solid, £15 per ton. Broken, £1 per ton more. Flake £2 per ton more. Crystals, 31/34%, £9 5s. per ton, carriage paid U.K. stations. Minimum, 4 ton lots, with slight reduction for contracts over a period. Continental material slightly cheaper. 60/62%, solid, offered at about £11 per ton, c.i.f. U.K. port. Broken, £12 per ton, c.i.f. U.K. port; 30/32%, crystals, £8 5s. per ton, c.i.f. U.K. port.

SULPHUR.—Flowers, £9 10s. per ton; Roll, £8 10s. per ton; Rock, £8 7s. 6d. per ton; Ground, £8 5s. per ton; ex store, prices nominal.

AMERICAN CRUDE SULPHUR on offer at about £5 2s. 6d. per ton, c.i.f. U.K. ports.

ZINC, CHLORIDE, 97/98%. of continental manufacture, quoted, £23 per ton, c.i.f. U.K. port. English material, for export, on offer at about £25 to £26 per ton, f.o.b. U.K. port.

ZINC, SULPHATE.—In moderate demand, and price unchanged at about £12 10s. per ton, ex store.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

German Dye Cartel and Proposed American Loan

THE \$30,000,000 loan proposed by American bankers to the German Dye Cartel is at present in abeyance, according to American reports. The loan may never be negotiated. It is fairly certain nothing will be done for several months. Objection to the loan has been raised on patriotic grounds. It was protested by American dye makers that it would tend to undo all that had been accomplished since the war toward the establishment of a national industry. Specifically, it has been maintained, the loan would enable the German Dye Cartel to recapture the markets in China and India by putting it in a position to extend attractive long-term credits, as it did before the war.

The Manchester Chemical Market

[FROM OUR OWN CORRESPONDENT.]

Manchester, April 17, 1925.

THE holiday break has naturally had its effect on business here, and in the early part of the week little was done in the chemical market. To-day, however, trade has recovered a certain amount of activity, and, judging from inquiries in several quarters, there seems to be a more hopeful feeling about. This, apparently, is based on the experience of some firms that buyers are showing a disposition to commit themselves farther ahead and, in some cases, for rather bigger quantities.

Heavy Chemicals

Saltcake is not attracting much attention, although prices keep fairly steady at about £4 per ton. Glauber salts are likewise on the slow side; current values of this article are unchanged at £3 10s. to £3 12s. 6d. per ton. Bleaching powder is firm at round £9 10s. per ton, and a slightly better tone is reported in this section. Caustic soda is being steadily called for at from £15 12s. 6d. for 60 per cent. strength to £18 per ton for 76-77 per cent. Alkali meets with a quietly steady demand, and values are maintained at about £6 15s. per ton. Soda crystals are selling in fair quantities at £5 5s. per ton. Hyposulphite of soda continues in limited request, but prices show little change from recent levels; photographic crystals are on offer at £13 10s. to £13 15s. per ton, and commercial quality at about £9 5s. Prussiate of soda keeps steady, and is slightly more active at 4d. per lb. Phosphate of soda is quiet, but about unchanged from last week at £12 15s. per ton. Bicarbonate of soda is in rather poor request, though values continue on the basis of £10 10s. per ton. Acetate of soda is quoted at £19 10s. to £20 per ton, but business continues on a limited scale. Sodium sulphide is unchanged in price, with little improvement in the weight of transactions; 60-65 per cent. concentrated is on offer at £13 15s. to £14 per ton, and crystals at about £9 10s. Bichromate of soda keeps steady and meets with a fair amount of inquiry at round 4d. per lb. Chlorate of soda is in moderate request at 2½d. per lb.

Caustic potash is well held at round £30 per ton, although the demand is not particularly active. Carbonate of potash sells fairly readily at from £24 10s. to £25 per ton. Chlorate of potash is in quietly steady request, and values are firm at about 2½d. per lb. Prussiate of potash is attracting only a limited amount of attention at 7d. per lb. Permanganate of potash meets with a moderate inquiry at from 6½d. per lb. for commercial quality to 7½d. for pharmaceutical. Bichromate of potash is steady, and in fair demand at 5d. per lb.

The price of sulphate of copper keeps up at from £24 10s. to £25 per ton, and a quiet trade is being put through. Arsenic as yet shows little indication of recovery, and prices continue weak, although not much changed from last report; white powdered, Cornish makes, is quoted here at round £29 per ton. Nitrate of lead is being quietly called for at about £41 10s. per ton. Acetate of lead is quoted at £45 10s. per ton for white and £41 10s. for brown. Acetate of lime is not arousing much interest, though values keep up; grey is on offer at £14 10s. to £15 per ton, and brown quality at about £9 10s. Commercial Epsom salts are in quiet demand at round £4 15s. per ton; magnesium sulphate, pharmaceutical quality, is unchanged at £6 5s.

Acids and Tar Products

Prices for the acids keep steady, and little change from last week can be reported. Tartaric and citric acids meet with a moderate inquiry at 1s. and 1s. 4½d. per lb. respectively. Oxalic acid is in fair demand at 3½d. to 4d. per lb. Acetic acid is quoted at about £40 per ton for 80 per cent. commercial, and £67 to £68 per ton for glacial.

Among coal-tar products creosote oil keeps fairly steady at 6½d. to 7d. per lb. Solvent naphtha is rather quiet at 1s. 5½d. per gallon. Pitch still attracts little attention, and value is nominal at round 40s. per ton. Naphthalenes are inactive, but unchanged at about £15 per ton for refined quality, and from £4 15s. per ton for crude. Carbollic acid keeps dull at 5d. to 5½d. per lb. for crystals and 1s. 7d. per gallon for crude material.

Notes on Trade Publications

"Superac"

"SUPERAC" is a publication issued by the Midland Tar Distillers, Ltd. (Joseph Turner and Co. Branch) Chemical Works, Queensferry, Chester, dealing with a patent active accelerating substance sold under this name for increasing the rapidity and effectiveness of vulcanising. It is stated to consist essentially of the condensation products of piperidine with carbon disulphide (CS₂), and belongs therefore to the carborthionate series of compounds. "Superac," as put on the market, is made up of a base of either colloidal clay ("Standard") or zinc oxide ("Z grade") carrying the active constituent.

There is given full details of a number of different rubber mixings showing how "Superac" is applied. For example, in the case of tyre manufacture, for the treads a suitable mixing is smoked sheet 55, carbon black 12, zinc oxide 30, sulphur 1½-2, and "Z Superac" 1, heated for 10-15 minutes at 40 lb.

The material is stated to be just as effective for the manufacture of solid tyres as in the case of pneumatics, and included in the other typical mixings given are inner tubes for tyres, strip, cables, soles and heels, bat handles, rubber stoppers, tiles, and ebonite. The publication, as well as the material, is certainly of considerable interest to everyone in the rubber industries.

"The Lassen Rheograph Water Flow Recorder"

A new and enlarged catalogue dealing with the well-known patent water flow recorder on the "V" notch or "weir" principle, is published by Messrs. James Gordon and Co., Ltd., Windsor House, Kingsway, London, W.C.2. Recorders of this description are extremely valuable for the continuous measurement of liquids flowing in an open channel, and find an extensive use in connection with boiler feed water, turbine condensate, household water, sewage, and cooling water, as well as, with special adaptations, various chemical solutions and liquids.

The catalogue, which is well produced, gives some interesting illustrations showing the Rheograph recorder at work, especially on boiler and power plant, particularly the No. 1 set in the power house at the Wembley Exhibition. Also there is included a detailed description of the recording and integrating devices embodied in the instrument, the general principle adopted for converting continuously the varying notch in the "V" notch to actual lb. of water passing being by means of what is termed a slotted "Rheobar," essentially the use of a slot cam of the same shape as the mathematical curve connecting the height in the "V" with the corresponding volume of water.

There is also attached to the catalogue an actual chart as used on the recording drum, and everyone interested, directly or indirectly, in the measurement of liquids should send for this publication.

"Phenol Formaldehyde Products in the Electrical Industry"

Attwater and Sons, Preston, issue an extremely interesting and detailed publication of about 70 pages dealing with the well-known "Super-Bakelique" products manufactured by the firm. These are essentially condensation products of phenol and formaldehyde, and find an extensive application in all kinds of industries. For electrical applications their great value, of course, is a remarkable high resistance, equal to 90,000 volts for sheets only 3 mm. thick, whilst they are claimed to possess the advantages of being non-hygroscopic, and not affected by heat up to 300° F., hot oil, and weak acids and alkalis. Further, they are not acted on in any way by a hot climate and are invulnerable to wood-boring insects.

The products are essentially substitutes for shellac, copal, and other expensive natural resinous non-conductors of electricity. In this respect they find all kinds of uses in the form of moulding powders, varnishes and varnished papers, and the publication includes a detailed contribution, "The effect of heat on the electric strength of some commercial insulating materials," read in February, 1922, by W. S. Flight, before the Institution of Electrical Engineers. This contains a mass of data on the subject, whilst finally there is given a useful description of the best methods of tooling and working ebonite, fibre and other insulating materials.

Company News

SADLER AND CO.—The directors have declared an interim dividend of 3 per cent., less tax, payable on April 20.

INTERNATIONAL NICKEL CO.—A quarterly dividend of 1½ per cent. on the preferred stock has been declared, payable on May 1.

WEARDALE LEAD CO.—A dividend of 1s. per share, less tax, is proposed, payable on April 4. A similar interim was declared a year ago.

CASTNER KELLNER ALKALI CO.—The directors have declared an interim dividend of 8 per cent. actual, less tax, for the six months ended March 31 last, payable on May 20.

CANADIAN EXPLOSIVES.—A dividend of 1½ per cent. has been declared for the quarter ended March 31, 1925, on the 7 per cent. cumulative preferred shares, payable on April 15.

BORAX CONSOLIDATED, LTD.—A dividend has been declared at the rate of 6 per cent. per annum, less tax at 4s. 6d. in the £, on the preferred ordinary shares in respect of the half-year ended March 31 last.

BURMAH OIL CO.—The directors have resolved to pay a half-yearly dividend on 6 per cent. preference, 6 per cent. second preference, and 8 per cent. preference shares, less 2s. 9½d., being the amount of British tax, less relief in respect of Dominion tax. The dividends are payable on April 30.

TEHDY MINERALS CO.—The profits for the year 1924 were £7,451, and £2,251 was brought forward. Corporation tax for 1923 absorbed £85, leaving a surplus of £9,617. The board propose to write off £1,000 from preliminary expenses and £6,807 from property account, leaving to be carried forward £1,809.

OLYMPIC PORTLAND CEMENT CO.—The report for the year 1924 states that the net profit amounts to £67,996, making, with £19,783 brought in, £87,779. Debenture redemption sinking fund absorbed £6,310 and depreciation £9,305, leaving £72,163. It is proposed to transfer £25,000 to reserve, which will then amount to £100,000, and the directors recommend a final dividend of 9 per cent., less tax, making 14 per cent. for the year, and leaving to be carried forward £20,038.

LEVER BROTHERS, LTD.—The accounts for the past year show a credit at profit and loss account, after providing for repairs, renewals, and alterations, depreciation and insurance, of £5,476,167. After payment of preference and preferred dividends and setting aside £219,589 for co-partnership dividends, it is proposed to pay a dividend on the ordinary shares of 10 per cent. and to place £250,000 to reserve. The balance to be carried forward is £55,312. A similar dividend was paid for the previous year.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Mark can be lodged up to May 1, 1925.

"EMPRESS."

455,558. For raw, or partly prepared, vegetable, animal, and mineral substances, used in manufactures, not included in other Classes. Class 4. Goodlass, Wall and Co., Ltd., 42 and 44, Seel Street, Liverpool, Lancashire, manufacturers. January 22, 1925. (To be Associated. Sect. 24.)



Opposition to the Registration of the following Trade Mark can be lodged up to May 8, 1925.

455,055. For sub-oxide of copper. F. W. Berk and Co., Ltd., 1, Fenchurch Avenue, London, E.C.3; chemical manufacturers. January 6, 1925.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

CHEMICAL MANURE.—The Egyptian Ministry of Agriculture invites tenders for the supply of different varieties of manure and E. bags. Specification from the Seed and Manure Sections of the Ministry of Agriculture, 12, Falaki Street, Cairo, and at the different Consulates abroad up to May 2. Conditions of tenders can be obtained at the Royal Egyptian Legation, 7, Charles Street, London, W.1.

FERTILISERS.—A firm of British fruit importers desires to get in touch with British manufacturers of fertilisers, who wish to appoint an agent in South Africa. (Reference No. 440).

CHEMICALS AND PHOTOGRAPHIC PAPER.—The Ministry of Finance, Egypt, is calling for tenders for the supply of photographic paper and chemicals. Specification and conditions of tender may be inspected at the D.O.T. (Room 53). (Reference No. B.X.1708).

LINSEED OIL, ETC.—A commission agent in Smyrna desires to represent British exporters of tarpaulins, linseed oil. (Reference No. 432).

VARNISHES, ENAMELS.—The South African Railways and Harbours are calling for tenders for the supply of varnishes and free flowing enamels. (Reference No. B.X. 1710).

OIL OF TURPENTINE.—A firm in Budapest wishes to represent British exporters of oil of turpentine. (Reference No. 426).

Tariff Changes

GERMANY.—The exportation of pyrites from Germany may be effected without licence as from April 7.

POLAND.—Particulars of new excise duties on sugar, matches, crude oil, paraffin wax and candles thereof, yeast and acetic acid may be obtained from the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1.

BRAZIL.—Recent orders dealing with the importation and despatch of munitions, explosives and relative chemicals, and latest regulations concerning their storage are set out in full in *The Board of Trade Journal* for April 9.

NEW CALEDONIA (FRENCH).—A decree reduces from 5 to 3 per cent. *ad valorem*, the duty on copra exported from New Caledonia to France and French colonies. The duty remains at the old rate when exporting to foreign countries.

BASUTOLAND, ETC.—Proclamations impose in Basutoland, Bechuanaland, and Swaziland dumping duties on cement imported from Sweden, and exchange dumping duties on asbestos-cement sheets imported from Jugo-Slavia and France. These duties are on the lines of the dumping duties recently imposed on similar articles imported into the Union of South Africa.

Palm Oil Extraction in Nigeria

For some time the Agriculture Department of the Nigerian Government has been devoting considerable attention to possible means of improving the native methods of extracting palm oil and obtaining palm kernels. With this object in view it has decided to encourage the production of palm oil and kernels on an industrial scale by the establishment of central factories equipped with modern scientific mechanical apparatus. According to a report prepared by the Agriculture Department, an approximate return of 31 per cent. on the capital outlay could be obtained under efficient management.

In the Nigerian Section at this year's British Empire Exhibition at Wembley it is proposed to erect a palm oil factory, equipped with plant and machinery, showing the complete process for extracting palm oil of high quality and obtaining the kernels. There will also be exhibited small hand-operated machines of an improved design suitable for use by the natives, the adoption of which would enable them to produce oil and kernels not only of superior quality but in greater quantity than they have hitherto been able to obtain.

The World Trade in Pyrites

Hopes of Expansion

MR. W. P. RUTHERFORD (managing director), speaking at the annual meeting in Glasgow on Wednesday of the Tharsis Sulphur and Copper Co., said:

Business during the year under review has been difficult. It is unnecessary to tell any of you here about the deplorable state of most of the staple heavy industries of this country. This has a direct effect on that part of our business which depends on British markets. Our deliveries of pyrites to British consumers were little more than half what we should expect in times of brisk trade. These, of course, control the tonnage of pyrites cinders available for our extraction works. Our works' business was further handicapped by the low market prices of our products, copper, and iron ores. The price of our brand of refined copper was £2 15s. under the average price of 1923, and is actually below the pre-war price. Owing to the competition of imported iron, several buyers of our purple ore and briquettes have shut down their plants, and the demand for these products is poor and at low prices. Until there is some improvement, therefore, in the state of the iron and steel trades of this country we cannot look forward to much change for the better in our extraction works' business in Great Britain. Your properties in Spain both in regard to development and equipment are in excellent condition, and this is reflected in the costs. Our new shipping pier, after a year's experience of its working, gives us complete satisfaction.

The accounts which we have presented to you reflect a position almost the same as for 1923, and, considering the deplorable state of trade affecting your British works, I venture to say that this result is not unsatisfactory.

The world trade in pyrites will show, I think, a further expansion in the current year, and the improvement will be proportionately reflected in our shipments. It may seem hard that the products of our ores happen to be basic elements which have come down in price to approximately pre-war levels, but possibly, taking a longer view, this is preferable to basking in the sunshine of inflation.

The report and accounts were adopted.

New Hydrogen Peroxide Process

A NEW process for the manufacture of hydrogen peroxide from barium peroxide has recently been patented by B. Laporte, Ltd., Luton. The process which promises, it is stated, to revolutionise the manufacture of hydrogen peroxide, is protected by British and foreign patents. The hydrogen peroxide produced per unit of barium peroxide used is much higher than has previously been attainable, and the blanc fixe (a by-product of the process) is equal in quality to that made by direct methods. The quality of the hydrogen peroxide is specially suitable for medicinal purposes. In addition, owing to its excellent keeping qualities, it will provide a stable hydrogen peroxide which does not develop pressure in bottles when stored. B. Laporte, Ltd., have a scheme in hand for the introduction to the public of this special quality hydrogen peroxide under the registered trade mark "Genoxide."

London University Contests

APRIL 7 was the last day of receipt for nominations for representatives of Convocation on the Senate. The only two contests are in the Faculty of Laws, where the candidates are Dr. Leslie Burgin, Director of Legal Studies at the Law Society's School of Law, and Judge Napier; and the Faculty of Medicine, where the candidates are Mr. T. B. Layton, and Dr. E. G. Graham Little. The Twentieth Century Society of London Graduates is recommending its members to support the first-named candidate in each case. The Society also recommends the support of the Rev. Dr. Scott Lidgett, Dr. A. W. Reed, and Miss Ethel Strudwick in the Faculty of Arts, and Mr. G. D. Dunkerley, Sir Philip Magnus, and Dr. George Senter in the Faculty of Science, all of whom have expressed their agreement with the objects and policy of the Society.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]

HADFIELD'S (MERTON), LTD., varnish manufacturers. (M., 18/4/25.) Registered March 30, £50,000 debentures; general charge. *Nil. December 31, 1924.

Satisfactions

JACOBY BLEACHING CO., LTD., Daybrook. (M.S., 18/4/25.) Satisfaction registered April 2, £20,000 and all moneys, etc., registered July 17, 1913.

NATIONAL BY-PRODUCTS, LTD., London, W.C. (M.S., 18/4/25.) Satisfaction registered April 3, £300, part of amount registered July 7, 1922.

London Gazette

Companies Winding Up Voluntarily

BARR (JAMES C.), LTD. (C.W.U.V., 18/4/25.) James Kennedy M'Auslin, Chartered Accountant, 94, Hope Street, Glasgow, appointed liquidator. Meeting of creditors at liquidator's office, April 23, at 12 o'clock noon.

FULLARTON (JOHN W.), LTD. (C.W.U.V., 18/4/25.) By special resolution March 10th, confirmed April 8th; H. Morris, Chartered Accountant, Greenock, appointed liquidator.

HIGGINBOTTOM (G. AND E.), LTD. (C.W.U.V., 18/4/25.) By special resolution, March 13, confirmed March 31; S. Lingard, 10, Marsden Street, Manchester, Chartered Accountant, appointed liquidator. Creditors' claims by April 30.

IMPROVED METALLIC PAINTS, LTD. (C.W.U.V., 18/4/25.) G. R. Mayne, 63, Courtfield Gardens, S.W.5, appointed liquidator, March 27.

Receivership

COLLINS (A. G.) AND BROTHER, LTD. (R., 18/4/25.) W. R. Gresty, C.A., of 133, Bute Street, Cardiff Docks, was appointed receiver and manager on April 2, 1925, under powers contained in debentures dated January 1, 1924.

New Companies Registered

MATZKA PRODUCTS (PROPRIETARY CO.), LTD. Manufacturing chemists, distillers and manufacturers of essences, syrups and alcohol. Nominal capital, £2,000 in 2s. shares.

METHLEY CHEMICAL CO., LTD., Yorks. Chemical manufacturers, druggists, etc. Nominal capital, £1,000 in 10,000 ordinary shares of 1s. each and 500 10 per cent preference shares of £1 each.

PRODUX, LTD., 312, Deansgate, Manchester. Chemical manufacturers. Nominal capital, £5,000 in £1 shares.

VEGOIL REFINERIES, LTD., Central House, Finsbury Square, London, E.C.2. Extractors, purifiers of and dealers in vegetable and other oils, etc. Nominal capital, £12,050 in 12,000 10 per cent. cumulative preference shares of £1 each and 1,000 ordinary shares of 1s. each.

Books on Economics

A RECENT letter to *The Times* by Sir Ernest Benn on the need of a list of sound books on economics brought in so many inquiries and excited so much public interest that the whole matter was reviewed by the author in two long articles in *The Times* of Monday and Tuesday. These concluded with a list of 51 books selected with a view to providing a library of sound and popular works on economics and so correcting many of the cheap and illusive theories propounded by the less responsible type of socialist advocates. *The Times*, in a leading article on the subject, warmly commends the idea and supports Sir Ernest Benn's plea for a reasoned study of the economic system under which we live.

